

حمل الآن

مجاناً وحصرياً

المراجعة رقم (1)

اختبار شهر نوفمبر



1- Choose the correct answer:

2

- a If $ax^2 - b = (3x - 2)(3x + 2)$, what is the value of $a + b$? $(-13, 13, -5, 5)$
- b Which of the following numbers can be the lengths of the sides of a right-angled triangle?
 $(7, 7, 4, 12, 5, 13, 5, 8, 7, 3, 7, 5)$

2- Answer each of the following:

8

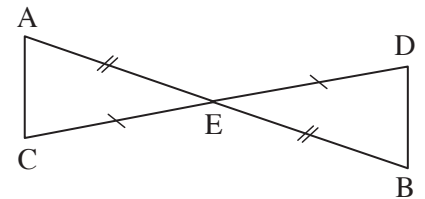
- a In the opposite figure:

E is the midpoint of each of $\overline{AB}$ and $\overline{CD}$

Prove that:

a. $\triangle AEC \cong \triangle BED$

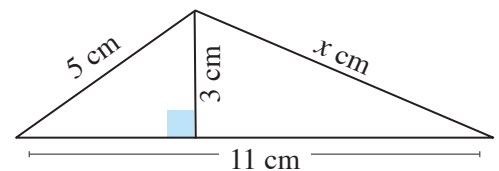
b. $\overline{AC} \parallel \overline{DB}$



- b Find the value of a that makes the following a perfect square:

$$4x^2 + ax + 49$$

- c Find the value of x :



- d Factorize each of the following:

a. $3x^2 - 75$

b. $8x^3 - 125$

1- Choose the correct answer:

2

- a If the polynomial $(4x^2 + kx + 1)$ is a perfect square trinomial, what is the value of k ?
 (± 1 , ± 2 , ± 4 , ± 8)

- b If $ax^3 - 27 = (2x - 3)(4x^2 + bx + 9)$, what is the value of ab ?
 (6 , 12 , 24 , 48)

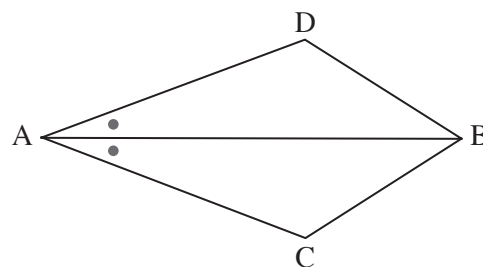
2- Answer each of the following:

8

- a In the opposite figure:

$\overrightarrow{AB}$ bisects $\angle DAC$, $\angle ACB \cong \angle ADB$

Prove that: $\triangle ACB \cong \triangle ADB$



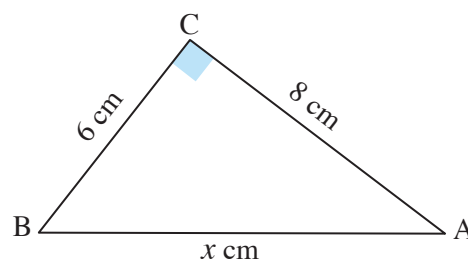
- b Find the solution set in $\mathbb{R}$:

a. $x^2 - 8x + 15 = 0$

b. $x^3 + 6x^2 + 5x = 0$

- c In the opposite figure: ABC is a right-angled triangle in ($\angle C$) :

Find the value of x



d Factorize each of the following:

a. $x^2y^2 - 4$

.....

b. $(x + 2)(x - 5) - 8$

.....

.....



1- Choose the correct answer:

2

- a If $x^2 - a = (x - 4)(x + 4)$, then the value of $a = \dots\dots\dots$ (-16 , 16 , -8 , 8)
- b A rectangle with a length of 24 cm and a width of 7 cm, then the length of its diagonal = $\dots\dots\dots$ cm (25 , 28 , 20 , 182)

2- Answer each of the following:

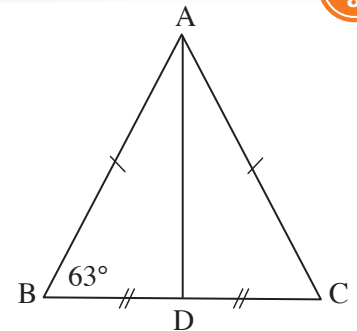
8

- a In the opposite figure:

The point D is the midpoint of $\overline{BC}$, $AB = AC$, $m(\angle B) = 63^\circ$

a. Prove that: $\triangle ADB \cong \triangle ADC$

b. Find: $m(\angle DAC)$



- b Determine the type of the triangle if its side lengths are:

4.5 cm , 20 cm and 21 cm

- c** Factorize the following completely:

$$x^2 + 16y^2 - 8xy - 49$$

- d** Use factorization to facilitate finding the value of:

a. $(49)^2 - 2(49)(39) + (39)^2$

b. $(87)^2 - (13)^2$

1- Choose the correct answer:

- a If $ax^2 - b = (3x - 2)(3x + 2)$, what is the value of $a + b$? $(-13, 13, -5, 5)$
- b Which of the following numbers can be the lengths of the sides of a right-angled triangle?
 $(7, 7, 4, 12, 5, 13, 5, 8, 7, 3, 7, 5)$

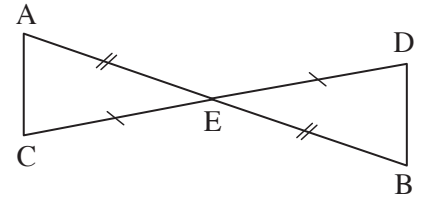
2- Answer each of the following:

- a In the opposite figure:

E is the midpoint of each of $\overline{AB}$ and $\overline{CD}$

Prove that:

- a. $\triangle AEC \cong \triangle BED$ b. $\overline{AC} \parallel \overline{DB}$



Proof: In $\triangle AEC, \triangle BED$

$\therefore$ E is the midpoint of $\overline{AB}$ and $\overline{CD}$

$\therefore AE = BE, EC = ED$

$\therefore m(\angle AEC) = m(\angle BED)$ (V.O.A)

$\therefore \triangle AEC \cong \triangle BED$ (first requirement)

$\therefore m(\angle A) = m(\angle B)$ and they are alternating interior angles

$\therefore \overline{AC} \parallel \overline{DB}$ (second requirement)

- b Find the value of a that makes the following a perfect square:

$$4x^2 + ax + 49$$

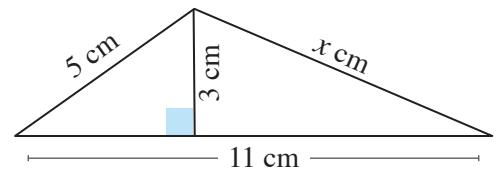
$$ax = \pm 2\sqrt{4x^2} \times \sqrt{49}$$

$$ax = \pm 28x$$

$$a = \pm 28$$

- c Find the value of x :

$$x = \sqrt{(3)^2 + (7)^2} = \sqrt{9 + 49} = \sqrt{58}$$



- d Factorize each of the following:

a. $3x^2 - 75$

$$3(x^2 - 25) = 3(x - 5)(x + 5)$$

b. $8x^3 - 125$

$$8x^3 - 125 = (2x - 5)(4x^2 + 10x + 25)$$

1- Choose the correct answer:

- a If the polynomial $(4x^2 + kx + 1)$ is a perfect square trinomial, what is the value of k ?
 (± 1 , ± 2 , ± 4 , ± 8)
- b If $ax^3 - 27 = (2x - 3)(4x^2 + bx + 9)$, what is the value of ab ?
 (6 , 12 , 24 , 48)

2- Answer each of the following:

- a In the opposite figure:

$\overrightarrow{AB}$ bisects $\angle DAC$, $\angle ACB \cong \angle ADB$

Prove that: $\triangle ACB \cong \triangle ADB$

Proof:

$\therefore \overrightarrow{AB}$ bisects $\angle DAC$

$\therefore m(\angle CAB) = m(\angle DAB)$

①

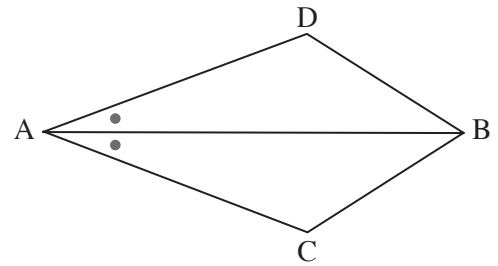
$\therefore \angle ADB \cong \angle ACB$

②

$\therefore m(\angle ABD) = m(\angle ABC)$

③

From ①, ②, ③ $\therefore \triangle ACB \cong \triangle ADB$



- b Find the solution set in $\mathbb{R}$:

a. $x^2 - 8x + 15 = 0$

b. $x^3 + 6x^2 + 5x = 0$

Solution:

a. $x^2 - 8x + 15 = 0$

$(x - 3)(x - 5) = 0$

$x = 3$ or $x = 5$

S.S = $\{3, 5\}$

b. $x^3 + 6x^2 + 5x = 0$, $x(x^2 + 6x + 5) = 0$

$x(x + 1)(x + 5) = 0$

$x = 0$ or $x = -1$ or $x = -5$

S.S = $\{0, -1, -5\}$

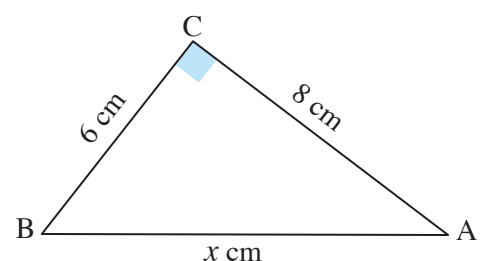
- c In the opposite figure: ABC is a right-angled triangle in $(\angle C)$:

Find the value of x

ABC is a right-angled triangle in C

$(AB)^2 = (BC)^2 + (AC)^2$

The value of $x = \sqrt{(6)^2 + (8)^2} = 10$



d Factorize each of the following:

a. $x^2 y^2 - 4$

$$(xy + 2)(xy - 2)$$

b. $(x + 2)(x - 5) - 8$

$$x^2 - 3x - 10 - 8$$

$$= x^2 - 3x - 18 = (x - 6)(x + 3)$$

1- Choose the correct answer:

- a If $x^2 - a = (x - 4)(x + 4)$, then the value of $a = \dots\dots\dots$ (-16 , 16 , -8 , 8)
- b A rectangle with a length of 24 cm and a width of 7 cm, then the length of its diagonal = $\dots\dots\dots$ cm (25 , 28 , 20 , 182)

2- Answer each of the following:

- a In the opposite figure:

The point D is the midpoint of $\overline{BC}$, $AB = AC$, $m(\angle B) = 63^\circ$

a. Prove that: $\triangle ADB \cong \triangle ADC$

b. Find: $m(\angle DAC)$

Proof: In $\triangle ADB$, $\triangle ADC$:

$$\therefore AB = AC$$

$$\therefore \overline{AD} \text{ (common side)}$$

$$\therefore BD = CD$$

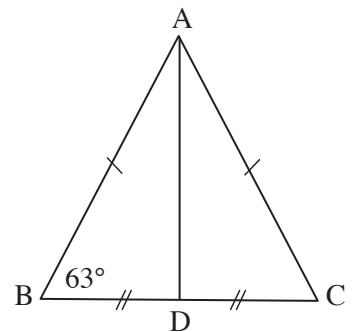
$$\therefore \triangle ADB \cong \triangle ADC$$

$$\therefore m(\angle C) = m(\angle B) = 63^\circ$$

$$\therefore m(\angle BAC) = 180^\circ - (63^\circ + 63^\circ) = 54^\circ$$

$$\therefore \triangle ADB \cong \triangle ADC$$

$$\therefore m(\angle DAC) = m(\angle DAB) = \frac{54^\circ}{2} = 27^\circ$$



- b Determine the type of the triangle if its side lengths are:

4.5 cm, 20 cm and 21 cm

$$(21)^2 = 441$$

$$(20)^2 + (4.5)^2 = 420.25$$

$$(21)^2 > (20)^2 + (4.5)^2$$

The triangle is obtuse-angled.

c Factorize the following completely:

$$x^2 + 16y^2 - 8xy - 49$$

$$\begin{aligned}x^2 + 16y^2 - 8xy - 49 &= (x^2 - 8xy + 16y^2) - 49 \\&= (x - 4y)^2 - (7)^2 \\&= (x - 4y - 7)(x - 4y + 7)\end{aligned}$$

d Use factorization to facilitate finding the value of:

a. $(49)^2 - 2(49)(39) + (39)^2$

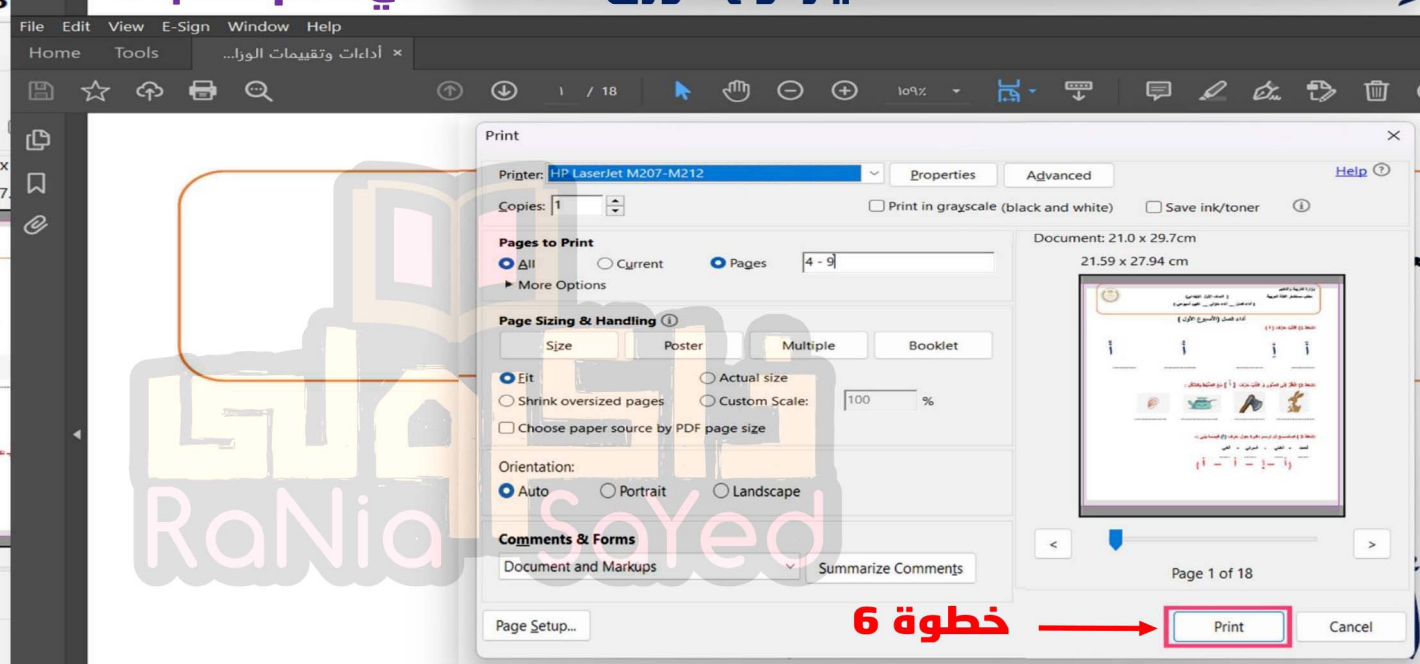
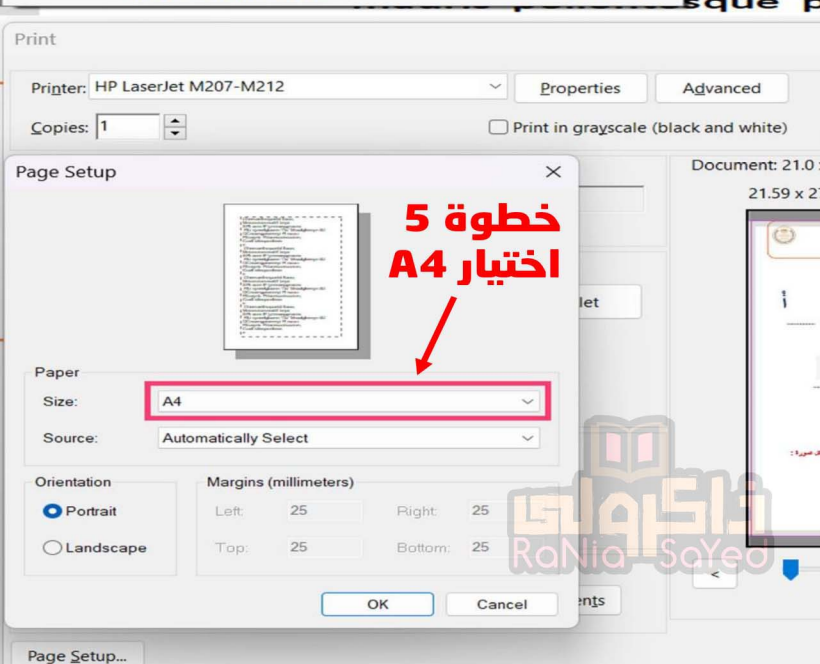
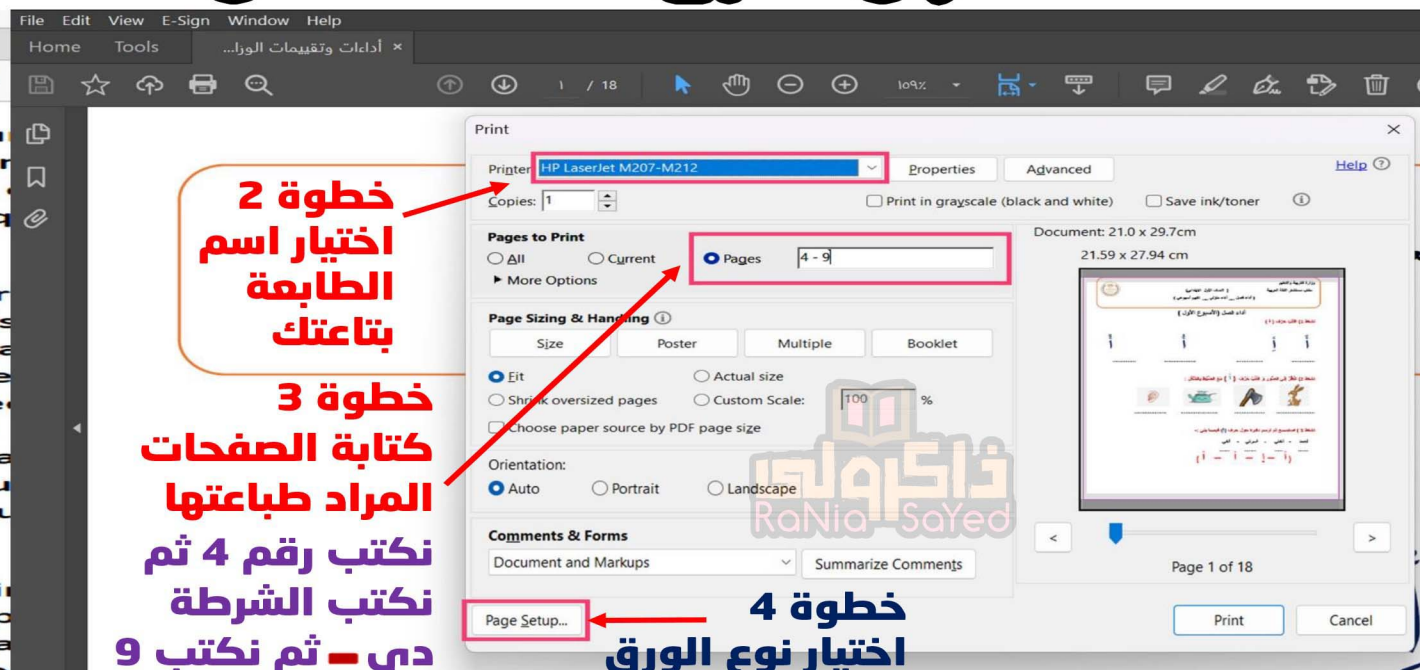
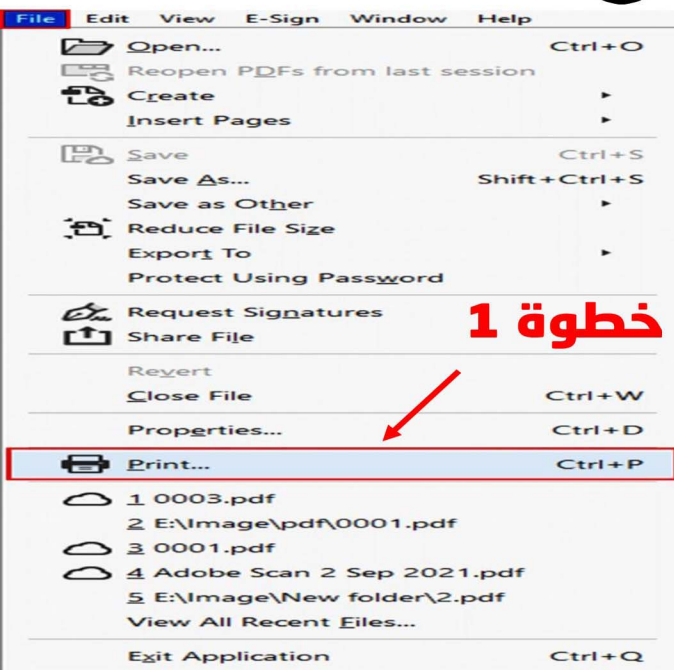
b. $(87)^2 - (13)^2$

Solution:

a. $(49 - 39)^2 = (10)^2 = 100$

b. $(87 + 13)(87 - 13) = 100 \times 74 = 7,400$

كيفية طباعة صفحات معينة من ملف معين مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



حمل الآن

مجاناً وحصرياً

المراجعة رقم (2)

اختبار شهر نوفمبر



Important questions on unit two



First Multiple choice questions

- 1 The greatest common factor in the polynomial $14x^3y - 7xy^2 - 63xy$ is
(a) $7x$ (b) $7y$ (c) $7xy$ (d) $7x^2y^2$
-
- 2 If $5xy + 5ab = 30$, then $xy + ab =$
(a) 5 (b) 6 (c) 10 (d) 15
-
- 3 $27a^3 + 18 =$ $(3a^3 + 2)$
(a) $9a$ (b) 18 (c) $3a$ (d) 9
-
- 4 If $2xy^2 + 2x^2y + 2xyz = 24$, $(y + x + z) = 6$, then $xy =$
(a) 2 (b) 4 (c) 3 (d) 8
-
- 5 $-15a^2b^2 + 9ab^3 =$
(a) $3(a^2b^2 + ab^3)$ (b) $-3ab^2(5a - 3b)$
(c) $3a^2b(5a - 3b)$ (d) $5ab(3a - 9b)$
-
- 6 $3a(2x + y) - 5b(2x + y) =$
(a) $(2x + y)(3a - 5b)$ (b) $(2x - y)(3a + b)$
(c) $(2x - y)(3a + 5b)$ (d) $(3a + b)(2x + 5y)$
-
- 7 If $(3a + b) = 5$, $(2m - n) = 8$, then $6ma + 2mb - 3na - nb =$
(a) 40 (b) 20 (c) 13 (d) 80
-
- 8 The solution set of the equation : $7x^2 + x = 0$ in $\mathbb{R}$ is
(a) $\{0, 7\}$ (b) $\{0, \frac{1}{7}\}$ (c) $\{-\frac{1}{7}, 0\}$ (d) $\emptyset$
-
- 9 If $(x - 1)$ is one of the factors of the trinomial $x^2 - 4x + 3$, then the other factor is
(a) $x + 3$ (b) $x + 4$ (c) $x + 1$ (d) $x - 3$
-
- 10 If $(x + 3y)$ is one of the factors of the trinomial $x^2 + xy - 6y^2$, then the other factor is
(a) $x - 2y$ (b) $x - 3y$ (c) $x + 2y$ (d) $x + 6y$

- 11 If $x^2 - ax + 12$ is factorizable, then a can be equal to
 (a) -1 (b) 4 (c) 7 (d) 1
-
- 12 If $x^2 + 7x + b$ is factorizable, then b can be equal to
 (a) 3 (b) 4 (c) 18 (d) -18
-
- 13 $x^2 + 5x + 4 = \dots\dots\dots$
 (a) $(x+4)(x+1)$ (b) $(x+5)(x-1)$
 (c) $(x+3)(x+2)$ (d) $(x-1)(x-4)$
-
- 14 The solution set of the equation : $x^2 - 6x - 16 = 0$ in $\mathbb{R}$ is
 (a) $\{2, 6\}$ (b) $\{2, 8\}$ (c) $\{-2, 8\}$ (d) $\{2, -8\}$
-
- 15 The number that can be added to the expression : $x^2 + 8x + 5$ to be factorizable is
 (a) 1 (b) 2 (c) 4 (d) 5
-
- 16 $x^2 + 3x - 18 = \dots\dots\dots$
 (a) $(x-6)(x+3)$ (b) $(x-3)(x-6)$
 (c) $(x-3)(x+6)$ (d) $(x+3)(x+6)$
-
- 17 If $x^2 + 8x + 12 = (x+a)(x+2)$, then $a = \dots\dots\dots$
 (a) 10 (b) 8 (c) 6 (d) 4
-
- 18 If $x + 3y = 5$, $2x - y = 3$, then $2x^2 + 5xy - 3y^2 = \dots\dots\dots$
 (a) 8 (b) 15 (c) -8 (d) -15
-
- 19 $3x^2 + 20x + 17 = \dots\dots\dots$
 (a) $(x+3)(x+17)$ (b) $(3x+17)(x+1)$
 (c) $(3x-1)(x-17)$ (d) $(3x-17)(x-1)$
-
- 20 If $(x-5)$ is one of the factors of the trinomial $7x^2 - 34x - 5$, then the other factor is
 (a) $7x-1$ (b) $7x+1$ (c) $x+7$ (d) $x-7$
-
- 21 If $6a^2 + ka + 10 = (2a-5)(3a-2)$, then $k = \dots\dots\dots$
 (a) 15 (b) 19 (c) -19 (d) 4

- 22** The solution set of the equation : $2x^2 - 9x + 9 = 0$ in $\mathbb{R}$ is
- (a) $\{3\}$ (b) $\{2, 3\}$ (c) $\{\frac{3}{2}, 3\}$ (d) $\{-\frac{3}{2}, -3\}$
-
- 23** If $5a^2 - 12ab + 7b^2 = 75$, $5a - 7b = -25$, then $a - b =$
- (a) -3 (b) 3 (c) -5 (d) 5
-
- 24** Which of the following polynomials represents a perfect square ?
- (a) $x^2 + 7x + 4$ (b) $x^2 - 9x + 9$
 (c) $x^2 + 24x + 144$ (d) $x^2 - 10x - 25$
-
- 25** If the trinomial $ax^2 + 8x + 1$ represents a perfect square , then $a =$
- (a) 4 (b) 8 (c) 12 (d) 16
-
- 26** If $x^2 + kx + 25$ represents a perfect square , then $k =$
- (a) ± 5 (b) ± 25 (c) ± 10 (d) ± 50
-
- 27** The value of k that makes : $4x^2 - 28x + k$ a perfect square is
- (a) 14 (b) 49 (c) ± 49 (d) 7
-
- 28** A square with an area of $(9x^2 + 48x + 64) \text{ cm}^2$ has a side length of cm
- (a) $x + 8$ (b) $3x + 4$ (c) $3x + 8$ (d) $x + 24$
-
- 29** $\frac{1}{4}x^2 + 3x + 9 =$
- (a) $(\frac{1}{2}x + 3)^2$ (b) $(2x + 3)^2$ (c) $(x + 9)^2$ (d) $(\frac{1}{2}x - 3)^2$
-
- 30** The missing term in the trinomial : $9y^2 + \dots + 16$ to be a perfect square is
- (a) $12y$ (b) $24y$ (c) $48y$ (d) $24y^2$
-
- 31** If $x^2 + 2xy + y^2 = 25$, then $(x + y) =$
- (a) 10 (b) ± 10 (c) 5 (d) ± 5
-
- 32** The solution set of the equation : $x^2 - 12x + 36 = 0$ in $\mathbb{R}$ is
- (a) $\{6\}$ (b) $\{-6\}$ (c) $\{6, -6\}$ (d) $\{4, 9\}$
-
- 33** $(73)^2 + 2 \times 27 \times 73 + (27)^2 =$
- (a) 100 (b) $1,000$ (c) $10,000$ (d) $100,000$

34 $25x^2 - 90xy + 81y^2 = \dots\dots\dots$

(a) $(5x + 9y)^2$

(b) $(5x - 9y)^2$

(c) $(9x + 5y)^2$

(d) $(9x - 5y)^2$

35 $x^2 - 9 = \dots\dots\dots$

(a) $(x - 3)^2$

(b) $(x + 3)^2$

(c) $(x + 3)(x - 3)$

(d) $(x - 1)(x + 9)$

36 $3x^2 - 3 = \dots\dots\dots$

(a) $(x - 3)^2$

(b) $(x - 3)(x + 3)$

(c) $3(x - 1)(x + 1)$

(d) $3(x - 1)^2$

37 $x^2(a + 2b) - y^2(a + 2b) = \dots\dots\dots$

(a) $(a + 2b)(x + y)(x - y)$

(b) $(x^2 + y^2)(a - 2b)$

(c) $(a + 2b)(x + y)^2$

(d) $(a - 2b)(x + y)(x - y)$

38 If $x^2 - 4y^2 = 21$, $x - 2y = 3$, then $x + 2y = \dots\dots\dots$

(a) 18

(b) 63

(c) 7

(d) 9

39 $x^3 - x = \dots\dots\dots$

(a) $(x^2 - x)^2$

(b) $x(x - 1)^2$

(c) $(x^2 - 1)(x - 1)$

(d) $x(x + 1)(x - 1)$

40 $49a^2b^4 - 4 = \dots\dots\dots$

(a) $(7ab^2 - 2)(7ab^2 + 2)$

(b) $(7ab^2 - 2)^2$

(c) $(7a^2b + 2)(7a^2b - 2)$

(d) $(7a^2b^2 + 2)^2$

41 The solution set of the equation : $x^2 - 25 = 0$ in $\mathbb{R}$ is $\dots\dots\dots$

(a) $\{-5, 5\}$

(b) $\{5\}$

(c) $\{-5\}$

(d) $\emptyset$

42 The solution set of the equation : $x^2 + 81 = 0$ in $\mathbb{R}$ is $\dots\dots\dots$

(a) $\{9\}$

(b) $\{-9\}$

(c) $\{-9, 9\}$

(d) $\emptyset$

43 The solution set of the equation : $x^2 + 9 = 25$ in $\mathbb{R}$ is $\dots\dots\dots$

(a) $\{-5, 5\}$

(b) $\{-3, 3\}$

(c) $\{-4, 4\}$

(d) $\emptyset$

44 The solution set of the equation : $x^3 = 36x$ in $\mathbb{R}$ is

- (a) $\{-6, 6\}$ (b) $\{0, -6, 6\}$ (c) $\{6\}$ (d) $\{0, 6\}$
-

45 $(75)^2 - (25)^2 = 100 \times$

- (a) 100 (b) 50 (c) 25 (d) 75
-

46 $x^3 + 1 = (x + 1)(\dots\dots\dots)$

- (a) $x^2 - 1$ (b) $x^2 + 1$ (c) $x^2 - x + 1$ (d) $x^2 + x + 1$
-

47 $(x - 2)(x^2 + 2x + 4) =$

- (a) $x^3 - 8$ (b) $x^2 - 8$ (c) $(x - 2)^2$ (d) $(x + 2)^2$
-

48 If $a^3 - b^3 = 64$, $a^2 + ab + b^2 = 16$, then $a - b =$

- (a) 8 (b) -4 (c) 4 (d) -8
-

49 If $x^3 + y^3 = 28$, $x + y = 2$, then $x^2 - xy + y^2 =$

- (a) 48 (b) 14 (c) 2 (d) 7
-

50 If $x^3 - k = (x - 5)(x^2 + 5x + 25)$, then $k =$

- (a) 125 (b) 25 (c) 5 (d) 15
-

51 If $x^3 + a = (x + 3)(x^2 - 3x + 9)$, then $\sqrt[3]{a} =$

- (a) 27 (b) 4 (c) 3 (d) 81
-

52 If $(2a + 3)$ is one of the factors of the polynomial $8a^3 + 27$, then the other factor is

- (a) $4a^2 + 9$ (b) $4a^2 - 6a + 9$ (c) $4a^2 + 6a - 9$ (d) $(2a - 3)^2$
-

53 $2ax + bx + 2ay + by =$

- (a) $(a + b)(x + y)$ (b) $(2a + b)(x + y)$ (c) $(2a - b)(x - y)$ (d) $(a - b)(x - y)$
-

54 $mn + 5n + 7m + 35 =$

- (a) $(m + 5)(n + 7)$ (b) $(m + 7)(n + 5)$
(c) $(5m + 7)(7n + 5)$ (d) $(m - 5)(n - 7)$
-

55 $y^3 + y^2 + y + 1 =$

- (a) $(y^2 + y)^2$ (b) $(y^2 + 1)^2$ (c) $(y + 1)(y^2 + 1)$ (d) $(y + 1)^3$
-

56 If $b^2 + bc + cd + db = 15$, $b + c = 3$, then $b + d = \dots\dots\dots$

- (a) 12 (b) 45 (c) 10 (d) 5

57 $a^2 + 4ab + 4b^2 - 49 = \dots\dots\dots$

- (a) $(a + 2b - 7)(a + 2b + 7)$ (b) $(a + 2b + 7)^2$
(c) $(a - 2b - 7)^2$ (d) $(a - 2b - 7)(a + 2b + 7)$

58 When completing the square for the expression : $(x^2 + 16)$, we add $\dots\dots\dots$

- (a) $\pm 4x$ (b) $\pm 8x$ (c) $\pm 4x^2$ (d) $\pm 8x^2$

59 $a^4 + 4b^4 = \dots\dots\dots$

- (a) $(a^2 + 2b^2 - 2ab)(a^2 + 2b^2 + 2ab)$ (b) $(a^2 + 2b)^2$
(c) $(a^2 - 2b^2)(a^2 + 2b^2)$ (d) $(a^2 + 2a^2b^2)^2$

60 If $(9m^2 + 2n^2 - 6mn)$ is one of the factors of the polynomial : $81m^4 + 4n^4$, then the other factor is $\dots\dots\dots$

- (a) $9m^2 + 2n^2 - 6mn$ (b) $9m^2 + 2n^2 + 6mn$
(c) $9m + 2n - 6mn$ (d) $9m + 2n + 6mn$

Second Essay questions

1 Factorize each of the following completely :

- | | |
|---------------------------------|------------------------------|
| ① $27x^3 + 9x$ | ② $8x^2 - 24$ |
| ③ $7a^3b^4 - 21ab^3 + 28a^2b^2$ | ④ $-4x^3 + 12x + 16x^2$ |
| ⑤ $6a^4 - 5a^2$ | ⑥ $3x(2a - 5) + y(2a - 5)$ |
| ⑦ $5a(2a - 3b) + 4b(2a - 3b)$ | ⑧ $(x + 5)^2 - y(x + 5)$ |
| ⑨ $3(a - 4) + (a - 4)^2$ | ⑩ $(x + 2)^3 - 2(x + 2)^2$ |
| ⑪ $x^2 + 8x + 15$ | ⑫ $x^2 - 7x + 12$ |
| ⑬ $x^2 + 13x - 30$ | ⑭ $x^2 - 3x - 18$ |
| ⑮ $3x^2 + 7x + 2$ | ⑯ $2x^2 + x - 6$ |
| ⑰ $2x^2 - 5x + 3$ | ⑲ $2x^2 - 5x - 12$ |
| ⑱ $25x^2 - 30x + 9$ | ⑳ $3x^2 + 24x + 48$ |
| ㉑ $49x^2 + 70xy + 25y^2$ | ㉒ $20x^4 + 60x^2y^2 + 45y^4$ |

$$\textcircled{23} 9x^2 - 16$$

$$\textcircled{25} 8x^3 + 125$$

$$\textcircled{27} a^3 + 0.008$$

$$\textcircled{29} bx + by + cx + cy$$

$$\textcircled{31} a^2 + 2ab + b^2 - c^2$$

$$\textcircled{33} 81x^4 + 4y^4$$

$$\textcircled{35} 1 - 4x^2$$

$$\textcircled{37} x^4 - 13x^2 + 36$$

$$\textcircled{24} 3x^2 - 75$$

$$\textcircled{26} 3x^3 - 81$$

$$\textcircled{28} ax + bx + 5a + 5b$$

$$\textcircled{30} xy + 5x + 7y + 35$$

$$\textcircled{32} x^4 + 4y^4$$

$$\textcircled{34} x^4 + 8x^2 + 16$$

$$\textcircled{36} 6x^2 + y(2y - 7x)$$

$$\textcircled{38} (x^2 + 4)(x + 1) - 5(x + 1)$$

2 Find the solution set of each of the following equations in $\mathbb{R}$:

$$\textcircled{1} 3x^2 + 6 = 0$$

$$\textcircled{3} x^4 + x^2 = 0$$

$$\textcircled{5} (2x + 3)^2 + 2x - 3 = 0$$

$$\textcircled{7} x^2 - 7x - 18 = 0$$

$$\textcircled{9} x^2 - x = 12$$

$$\textcircled{11} (x + 7)(x + 3) = -3$$

$$\textcircled{13} 3x^2 - 2x - 8 = 0$$

$$\textcircled{15} -2x^2 + 13x - 15 = 0$$

$$\textcircled{17} a^2 + 6a + 9 = 0$$

$$\textcircled{19} 16b^2 + 9 = 24b$$

$$\textcircled{21} x^2(x + 1)^2 - (x + 1)^2 = 0$$

$$\textcircled{23} 9x^2 - 1 = 0$$

$$\textcircled{25} x^2 - 2x - 4 = 0$$

$$\textcircled{2} 2x^2 + x = 0$$

$$\textcircled{4} x(x - 2) + 5(x - 2) = 0$$

$$\textcircled{6} x^2 + x - 6 = 0$$

$$\textcircled{8} x^2 - 8x + 15 = 0$$

$$\textcircled{10} x(x + 9) = 10$$

$$\textcircled{12} 5x - x^2 = -24$$

$$\textcircled{14} 7x^2 + 5 = 12x$$

$$\textcircled{16} x^3 + 6x^2 + 5x = 0$$

$$\textcircled{18} 4m^2 - 4m + 1 = 0$$

$$\textcircled{20} 25x^2 - 4(5x - 1) = 0$$

$$\textcircled{22} x^2 - 4 = 0$$

$$\textcircled{24} x^2 + 12x + 7 = 0$$

3 Use factorizing to facilitate finding the result of each of the following :

$$\textcircled{1} 15 \times 12 - 15 \times 10$$

$$\textcircled{3} (64)^2 + 2 \times 64 \times 36 + (36)^2$$

$$\textcircled{5} (48)^2 - (42)^2$$

$$\textcircled{2} 7 \times 27 + 7 \times 18 - 7 \times 25$$

$$\textcircled{4} (99)^2 + 2 \times 99 + 1$$

4 The area of a rectangle is $(x^2 + 9x - 22) \text{ cm}^2$, find possible dimensions for this rectangle in terms of x

1 Choose the correct answer from those given :

1 If $\triangle ABC \cong \triangle XYZ$, $m(\angle A) + m(\angle B) = 100^\circ$, then $m(\angle Z) = \dots\dots\dots$

- (a) 50° (b) 80° (c) 100° (d) 180°

2 If $\triangle ABC \cong \triangle XYZ$, the perimeter of the triangle $ABC = 18 \text{ cm}$, $BC = 6 \text{ cm}$, then $XY + XZ = \dots\dots\dots$

- (a) 3 cm (b) 6 cm (c) 12 cm (d) 24 cm

3 If $3x + 3y = 18$, then $2x + 2y = \dots\dots\dots$

- (a) 2 (b) 6 (c) 12 (d) 54

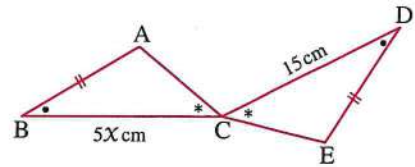
4 If $ABCD$ is a rectangle , then $\overline{AC} \cong \dots\dots\dots$

- (a) $\overline{AB}$ (b) $\overline{BC}$ (c) $\overline{AD}$ (d) $\overline{BD}$

5 In the given figure :

What is the value of x ?

- (a) 3 (b) 5
(c) 10 (d) 15



6 If the polynomial $(16x^2 - 40x + k^2)$ is a perfect square , then $k = \dots\dots\dots$

- (a) 5 (b) -5 (c) ± 5 (d) 8

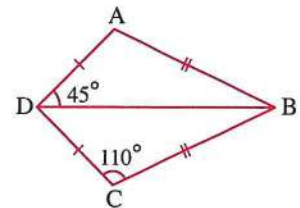
2 In the given figure :

$AD = CD$, $AB = CB$,

$m(\angle ADB) = 45^\circ$, $m(\angle C) = 110^\circ$

1 Prove that : $\triangle ABD \cong \triangle CBD$

2 Find : $m(\angle A)$

**3 Factorize each of the following completely :**

1 $x^2 - 3x - 10$

2 $25 - 9x^2$

3 $y^3 - 8$

November tests



Test 1

1 Choose the correct answer from those given :

1 If $x^2 - b^2 = (x - 3)(x + 3)$, what is the value of b ?

- (a) ± 1 (b) ± 3 (c) ± 6 (d) ± 9

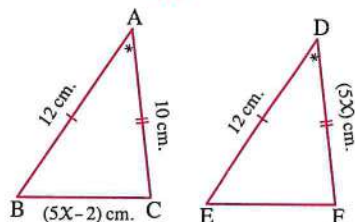
2 When completing the square for the expression : $(x^2 + 9)$, we add

- (a) $\pm 3x$ (b) $\pm 6x$ (c) $\pm 9x$ (d) $\pm 12x$

3 In the given figure :

What is the length of $\overline{EF}$?

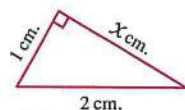
- (a) 6 cm (b) 8 cm
(c) 10 cm (d) 12 cm



4 In the given figure :

What is the value of x ?

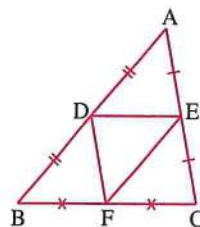
- (a) 1 (b) 3 (c) $\sqrt{5}$ (d) $\sqrt{3}$



5 In the given figure :

If the perimeter of $\triangle ABC$ is 18 cm ,
what is the perimeter of $\triangle DEF$?

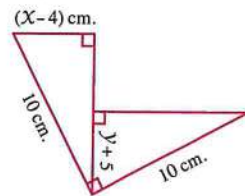
- (a) 6 cm (b) 12 cm
(c) 36 cm (d) 9 cm



6 In the given figure :

What is the value of $x - y$?

- (a) 9 (b) 6
(c) 5 (d) 1



2 Identify the type of the triangle based on its angles if the lengths of its sides are :
6 cm , 3 cm and 5 cm

3 Factorize each of the following completely :

1 $x^4 + 4y^4$

2 $20x^3 - 45x$

3 $x^2 - y^2 - 6x - 6y$

Test

2

1 Choose the correct answer from those given :

1 $x^2 - a x + b x - a b = \dots\dots\dots$

(a) $(x - a)(x - b)$

(b) $(x - a)(x + b)$

(c) $(x + a)(x - b)$

(d) $(x + a)(x + b)$

2 If $x^2 - y^2 = -16$, $x - y = -2$, then $x + y = \dots\dots\dots$

(a) 2

(b) 4

(c) 8

(d) 16

3 In the given figure :

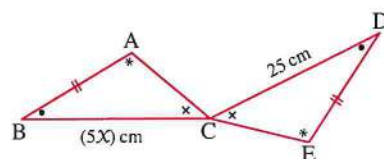
What is the value of x ?

(a) 5

(b) 10

(c) 20

(d) 25



4 In the given figure :

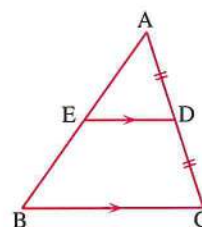
If the length of $\overline{EB} = 10$ cm ,
what is the length of $\overline{AB}$?

(a) 20 cm

(b) 10 cm

(c) 7.5 cm

(d) 5 cm



5 Which of the following numbers could be the lengths of the sides of an obtuse-angled triangle ?

(a) 24 , 10 , 27

(b) 2.5 , 2 , 1.5

(c) 7 , 7 , 7

(d) 20 , 10 , $10\sqrt{3}$

6 In the given figure :

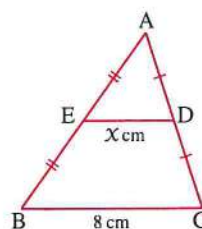
What is the value of x ?

(a) 16

(b) 8

(c) 4

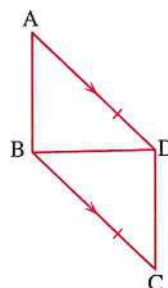
(d) 2



2 In the given figure :

$\overline{AD} \parallel \overline{BC}$, $\overline{AD} \cong \overline{CB}$

Prove that : $\triangle ABD \cong \triangle CDB$



3 Factorize each of the following completely :

1 $m^3 + n^3 - m - n$

2 $x^4 - 11x^2 + 1$

3 $x^2 - \frac{4}{81}$

Test 3

1 Choose the correct answer from those given :

1 If the polynomial $(kx^2 - 12x + 9)$ is a perfect square, what is the value of k ?

- (a) 4 (b) ± 4 (c) 2 (d) ± 2

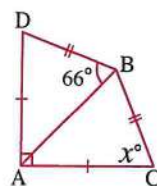
2 If $(x^2 + 2x + 2)$ is one of the factors of the expression $(x^4 + 4)$, what is the other factor?

- (a) $x^2 - 2x + 2$ (b) $x^2 - 2x - 2$ (c) $x^2 + x + 2$ (d) $x^2 - x + 2$

3 In the given figure :

What is the value of x ?

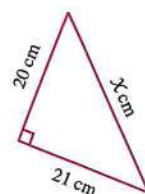
- (a) 66 (b) 45
(c) 34 (d) 69



4 In the given figure :

What is the value of x ?

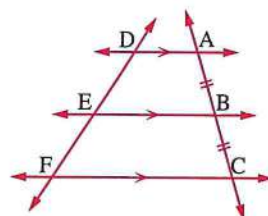
- (a) 41 (b) 29
(c) $\sqrt{41}$ (d) $\sqrt{29}$



5 In the given figure :

If the length of $\overline{DF}$ is 15 cm, what is the length of $\overline{EF}$?

- (a) 10 cm (b) 7.5 cm
(c) 5 cm (d) 2.5 cm

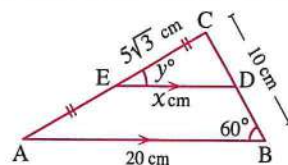


6 Which of the following numbers could be the lengths of the sides of an acute angled triangle?

- (a) 4, 4, $4\sqrt{2}$ (b) 6, 8, 10 (c) 7.5, 3.7, 8 (d) 6, 6, 9

2 In the given figure :

Find the value of each of : x and y



3 Factorize each of the following completely :

1 $k^2 - 36m^2$

2 $a^2x + b^2x + b^2 + a^2$

3 $x^3 + 27$

حمل الآن

مجاناً وحصرياً

المراجعة رقم (3)

اختبار شهر نوفمبر



Math prep 2

2026



ENG.ESLAM EMAM
MATH TEACHER

Algebra

Unit 2

1 Choose the correct answer.

1) $6a - 8b = \dots\dots\dots$

- (A) $6(a - 2b)$ (B) $4(2a - 4b)$ (C) $2(3a - 4b)$ (D) $14(a - b)$

2) What is the greatest common factor between the terms of the polynomial $12x^2 - 8x$?

- (A) 2 (B) 4 (C) $2x$ (D) $4x$

3) Which of the following represents the factorization of the polynomial $16x^2 - 24x^3$ by taking out GCF?

- (A) $8x(2x - 3x^2)$ (B) $4x^2(4 - 6x)$
(C) $8x^2(2 - 3x)$ (D) $8(2x^2 - 3x^3)$

4) $x(a + b) + y(a + b) = \dots\dots\dots$

- (A) $(x - y)(a - b)$ (B) $(x + y)(a + b)$
(C) $(x - y)(a + b)$ (D) $(x + y)(a - b)$

5) $x + 2y = 7$, then what is the value of $2x + 4y$?

- (A) 14 (B) 28 (C) 18 (D) 56

6) $n - 5m = 10$, then what is the value of $10m - 2n$?

- (A) 100 (B) -100 (C) 20 (D) -20

7) $3x + 3y = 18$, then what is the value of $x + y$?

- (A) 54 (B) 15 (C) 6 (D) 2

8) $x^2(3a - b) - y(b - 3a) = (3a - b)(\dots\dots\dots)$

- (A) $x^2 + y$ (B) $x^2 - y$ (C) $y - x^2$ (D) $y^2 - x$

9) If $x + y = 10$, $a - b = 7$, then $x(a - b) - y(b - a) = \dots\dots\dots$

- (A) 3 (B) 17 (C) 51 (D) 70

10) $x^2 + x - 20 = \dots\dots\dots$

- (A) $(x - 4)(x + 5)$ (B) $(x + 4)(x + 5)$
(C) $(x - 4)(x - 5)$ (D) $(x + 4)(x - 5)$

11) $x^2 - 20 + x = \dots\dots\dots$

- (A) $(x - 4)(x + 5)$ (B) $(x + 4)(x + 5)$
(C) $(x - 4)(x - 5)$ (D) $(x + 4)(x - 5)$

- 12) Which of the following represents the factorization of the polynomial $5x - 6 - x^2$?
- (A) $(x - 2)(x - 3)$ (B) $(x + 2)(x + 3)$
(C) $-(x + 2)(x + 3)$ (D) $-(x - 2)(x - 3)$
- 13) If $(x + 3)$ is one of the factors of the trinomial $(x^2 - x - 12)$, then what is the other factor?
- (A) $(x + 2)$ (B) $(x - 2)$ (C) $(x + 4)$ (D) $(x - 4)$
- 14) If $(x - 1)$ is one of the factors of the trinomial $(x^2 - 4x + 3)$, then what is the other factor?
- (A) $(x + 3)$ (B) $(x + 4)$ (C) $(x + 1)$ (D) $(x - 3)$
- 15) If $x + 4y = 8$, $x - 3y = 5$, what is the numerical value of the polynomial $(x^2 + xy - 12y^2)$?
- (A) 14 (B) 40 (C) $\frac{8}{2}$ (D) 3
- 16) If $m + 2n = 7$, $m - 3n = 2$, what is the numerical value of the polynomial $(6n^2 + mn - m^2)$?
- (A) 14 (B) 9 (C) -9 (D) -14
- 17) If $x^2 - 11x + 28 = (x - a)(x - b)$, what is the value of $a + b$?
- (A) -16 (B) -11 (C) 11 (D) 16
- 18) If $x^2 + ax + 15 = (x + 3)(x + b)$, what is the value of ab ?
- (A) 5 (B) 8 (C) 13 (D) 40
- 19) If $x^2 - kx + 18$ is factorizable, then k can be equal to
- (A) 10 (B) 12 (C) -12 (D) -11
- 20) If $x^2 - 3x + c$ is factorizable, then c can be equal to
- (A) 1 (B) 2 (C) 4 (D) 6
- 21) If $x^2 + 7x + a$ is factorizable, then a can be equal to
- (A) 8 (B) 10 (C) 18 (D) 49
- 22) The number can be added to expression: $x^2 + 8x + 5$ to be factorizable is
- (A) 1 (B) 2 (C) 4 (D) 5

23) If $x^2 + 2x - 15 = 0$, which of the following is true?

- (A) $x = 3, x = 5$ (B) $x = 3, x = -5$
(C) $x = -3, x = 5$ (D) $x = -3, x = -5$

24) If $(x - 3)(x + 5) = 0$, which of the following is true?

- (A) $x = 3$ or $x = 5$ (B) $x = 3$ or $x = -5$ (C) $x = -3$ or $x = 5$ (D) $x = -3$ or $x = -5$

25) If $(x - 5)$ is one of the factors of the trinomial $(2x^2 - 7x - 15)$, then what is the other factor?

- (A) $(x + 2)$ (B) $(2x - 3)$ (C) $(2x + 3)$ (D) $(x - 3)$

26) If $(x + 1)$ is one of the factors of the trinomial $(5x^2 - 2x - 7)$, then what is the other factor?

- (A) $(7x - 5)$ (B) $(7x + 5)$ (C) $(5x + 7)$ (D) $(5x - 7)$

27) If $3x - 2y = 6$, $2x + 3y = 5$, what is the numerical value of the polynomial $(6x^2 + 5xy - 6y^2)$?

- (A) 10 (B) 11 (C) 12 (D) 30

28) Which of the following represents a perfect square?

- (A) $x^2 + 10x + 16$ (B) $x^2 + 10x + 25$
(C) $9x^2 - 18x + 1$ (D) $5x^2 + 18x + 9$

29) Which of the following represents a perfect square?

- (A) $x^2 + 7x + 4$ (B) $x^2 - 9x + 9$
(C) $x^2 + 24x + 144$ (D) $x^2 - 10x - 25$

30) $25x^2 - 90xy + 81y^2 = \dots\dots\dots$

- (A) $(5x + 9y)^2$ (B) $(5x - 9y)^2$ (C) $(9x + 5y)^2$ (D) $(9x - 5y)^2$

31) If the expression: $(kx^2 - 12x + 9)$ is a perfect square, then $k = \dots\dots\dots$

- (A) 4 (B) ± 4 (C) 2 (D) ± 2

32) If the expression: $(ax^2 + 8x + 1)$ is a perfect square, then $a = \dots\dots\dots$

- (A) 4 (B) 8 (C) 12 (D) 16

33) If the expression: $x^2 + 4x + k$ is a perfect square , then $k = \dots\dots\dots$

- (A) 1 (B) 2 (C) 3 (D) 4

34) If the expression: $16x^2 - 40x + k^2$ is a perfect square , then $k = \dots\dots\dots$

- (A) -5 (B) -5 (C) ± 5 (D) 8

35) If the expression: $x^2 - 6x - m$ is a perfect square , then $m = \dots\dots\dots$

- (A) -9 (B) 1 (C) 3 (D) 7

36) If the expression: $4x^2 + ax + 49$ is a perfect square , then $a = \dots\dots\dots$

- (A) ± 14 (B) ± 28 (C) ± 7 (D) ± 4

37) If the expression: $9x^2 + kx + 49$ is a perfect square , then $k = \dots\dots\dots$

- (A) ± 7 (B) ± 21 (C) ± 42 (D) ± 72

38) If the expression: $4x^2 + kx + 1$ is a perfect square , then $k = \dots\dots\dots$

- (A) ± 1 (B) ± 2 (C) ± 4 (D) ± 8

39) If the expression: $(36x^2 + kx + 1)$ is a perfect square , then $k = \dots\dots\dots$

- (A) 6 (B) ± 6 (C) 12 (D) ± 12

40) If $x = \sqrt{5} + \sqrt{2}$, $y = \sqrt{5} - \sqrt{2}$, what is the value of the polynomial $(x^2 + 2xy + y^2)$

- (A) 8 (B) 20 (C) $2\sqrt{5}$ (D) 10

41) If $x^2 + 2xy + y^2 = 25$, what is the value of $(x + y)$?

- (A) 10 (B) ± 10 (C) 5 (D) ± 5

42) If $a^2 + 2ab + b^2 = 36$, what is the value of $(a + b)$?

- (A) 6 (B) -6 (C) ± 6 (D) 18

43) A square has an area of $(9x^2 + 30x + 25) \text{ cm}^2$,what is the length of its side in terms of x ?

- (A) $(3x + 5) \text{ cm}$ (B) $(5x + 2) \text{ cm}$
(C) $(3x^2 - 5) \text{ cm}$ (D) $(3x^2 + 5) \text{ cm}$

44) A square has an area of $(9x^2 + 48x + 64) \text{ cm}^2$, what is the length of its side in terms of x ?

- (A) $(x + 8) \text{ cm}$ (B) $(3x + 4) \text{ cm}$
(C) $(3x + 8) \text{ cm}$ (D) $(x + 24) \text{ cm}$

45) $(73)^2 + 2 \times 27 \times 73 + (27)^2 = \dots\dots\dots$

- (A) 100 (B) 1,000 (C) 10,000 (D) 100,000

46) $x^3 - x = \dots\dots\dots$

- (A) $(x^2 - x)^2$ (B) $x(x - 1)^2$
(C) $(x^2 - 1)(x - 1)$ (D) $x(x + 1)(x - 1)$

47) If $x^2 - a = (x - 4)(x + 4)$, what is the value of a ?

- (A) -16 (B) 16 (C) -8 (D) 8

48) If $x^2 - b^2 = (x - 3)(x + 3)$, what is the value of b ?

- (A) ± 1 (B) ± 3 (C) ± 6 (D) ± 9

49) If $ax^2 - b = (3x - 2)(3x + 2)$, what is the value of $a + b$?

- (A) -13 (B) 13 (C) -5 (D) 5

50) If $ax^2 - b = (2x + 3)(2x - 3)$, what is the value of $a + b$?

- (A) -13 (B) 13 (C) -5 (D) 5

51) If $a + b = 3$, $a - b = 2$, what is the value of $a^2 - b^2$?

- (A) 1 (B) 5 (C) 6 (D) -6

52) If $a^2 - b^2 = 6$, $a - b = 2$, what is the value of $a + b$?

- (A) 1 (B) 5 (C) 3 (D) -3

53) If $x + 2y = 3$, $x^2 - 4y^2 = 21$, what is the value of $x - 2y$?

- (A) 14 (B) 9 (C) 7 (D) 6

54) If $x^2 - y^2 = 16$, $y - x = 2$, what is the value of $x + y$?

- (A) 4 (B) 8 (C) -8 (D) 2

55) If $a^2 - b^2 = 45$, $a - b = 5$, what is the value of $\sqrt{a + b}$?

- (A) 9 (B) 3 (C) -3 (D) ± 3

56) If $x - y = -2$, $x^2 - y^2 = -16$, what is the arithmetic mean of the two numbers x, y ?

- (A) 2 (B) 4 (C) 8 (D) 16

57) If $(75)^2 - (25)^2 = 100 \times \dots\dots\dots$, what is the value of x ?

- (A) 100 (B) 50 (C) 25 (D) 75

58) If $(25)^2 - (15)^2 = 10x$, what is the value of x ?

- (A) 40 (B) 30 (C) 20 (D) 10

59) If $x^3 - 8 = (x + a)(x^2 + 2x + 4)$, what is the value of a ?

- (A) 4 (B) -4 (C) 2 (D) -2

60) If $x^3 + 27 = (x + 3)(x^2 + k + 9)$, what is the value of k ?

- (A) $-6x$ (B) $-3x$ (C) $3x$ (D) $6x$

61) If $ax^3 - 27 = (2x - 3)(4x^2 + bx + 9)$, what is the value of ab ?

- (A) 6 (B) 12 (C) 24 (D) 48

62) $x^2 - ax + bx - ab = \dots\dots\dots$

- (A) $(x - a)(x - b)$ (B) $(x - a)(x + b)$
(C) $(x + a)(x - b)$ (D) $(x + a)(x + b)$

63) $7x - 28 + ax - 4a = \dots\dots\dots$

- (A) $(x - 4)(x - 7)$ (B) $(x - 4)(a + 7)$
(C) $(x + 4)(x + 7)$ (D) $(x + 4)(x - 7)$

64) $a + b = 2$, $c + d = 8$, then $ac + ad + bc + bd = \dots\dots\dots$

- (A) 16 (B) 6 (C) 10 (D) 12

65) $y^3 + y^2 + y + 1 = \dots\dots\dots$

- (A) $(y^2 + y)^2$ (B) $(y^2 + 1)^2$
(C) $(y + 1)(y^2 + 1)$ (D) $(y + 1)^3$

66) $a^2 + 4ab + 4b^2 - 49 = \dots\dots\dots$

- (A) $(a + 2b - 7)(a + 2b + 7)$ (B) $(a + 2b + 7)^2$
(C) $(a - 2b - 7)^2$ (D) $(a - 2b - 7)(a + 2b + 7)$

67) $xy + 5x + 7y + 35 = (x + a)(y + b)$, what is the value of $a - b$?

- (A) 2 (B) -2 (C) 12 (D) -12

68) $x^3 + 5x^2 - 4x - 20 = (x + a)(x + b)(x + c)$, what is the value of $a + b + c$?

- (A) 2 (B) 5 (C) 7 (D) 9

69) When completing the square for $(x^2 + 9)$ we add

- (A) $\pm 3x$ (B) $\pm 6x$ (C) $\pm 9x$ (D) $\pm 12x$

70) When completing the square for $(x^2 + 49)$ we add

- (A) $\pm 7x$ (B) ± 14 (C) $\pm 14x$ (D) $\pm 28x$

71) When completing the square for $(x^2 + 12x)$ we add

- (A) ± 9 (B) ± 36 (C) 9 (D) 36

72) The solution set of the equation: $x^2 - 12x + 36 = 0$ in $\mathbb{R}$ is

- (A) {6} (B) {-6} (C) {6, -6} (D) {4, 9}

73) The solution set of the equation: $x^2 - 9x - 10 = 0$ in $\mathbb{R}$ is

- (A) {-10, -1} (B) {10, -1} (C) {-10, 1} (D) $\emptyset$

74) The solution set of the equation: $x^2 - 6x - 16 = 0$ in $\mathbb{R}$ is

- (A) {2, 6} (B) {2, 8} (C) {-2, 8} (D) {2, -8}

75) The solution set of the equation: $2x^2 - 9x + 9 = 0$ in $\mathbb{R}$ is

- (A) {3} (B) {2, 3} (C) $\left\{\frac{3}{2}, 3\right\}$ (D) $\left\{-\frac{3}{2}, -3\right\}$

76) The solution set of the equation: $x^2 - 25 = 0$ in $\mathbb{R}$ is

- (A) {-5, 5} (B) {5} (C) {-5} (D) $\emptyset$

77) The solution set of the equation: $x^2 + 25 = 0$ in $\mathbb{R}$ is

- (A) {-5, 5} (B) {5} (C) {-5} (D) $\emptyset$

78) The solution set of the equation: $x^2 + 81 = 0$ in $\mathbb{R}$ is

- (A) {9} (B) {-9} (C) {-9, 9} (D) $\emptyset$

79) The solution set of the equation: $x^2 + 9 = 25$ in $\mathbb{R}$ is

- (A) {-5, 5} (B) {-3, 3} (C) {-4, 4} (D) $\emptyset$

2**Answer the following questions**

1) Factorization by taking the greatest common factor:

a) $12x^3y^4 + 18x^2y^2 - 24xy^3$

b) $a(b + 5) + 2(b + 5)$

c) $(2x + 5)^2 - 4(2x + 5)$

2) Factorize each of the following completely:

a) $x^2 - 3x - 10$

b) $a^2 + 9ab + 20b^2$

c) $x^2 + 21 - 10x$

d) $3x^2 - 21x + 30$

e) $-x^2 + 3x + 40$

f) $3x^2 + 2x - 5$

g) $6x^2 - 23x - 35$

h) $x^2 - 4$

i) $4x^2 - 9$

j) $k^2 - 64m^2$

k) $25 - 9x^2$

l) $(x + 3)^2 - 25$

m) $x^3 + 1$

n) $y^3 - 8$

o) $x^3 + 64$

p) $x^3y^3 - 27$

q) $3x^3 + 24$

r) $x^4 + 8x$

s) $ab + bd + ae + de$

t) $7x - 28 + ax - 4a$

u) $3x^3 + 2x^2 - 3x - 2$

v) $x^2 - 6x - y^2 + 6y$

w) $4m^4 + 1$

x) $4x^4 + 81$

3) Find the solution set of each of the following in $\mathbb{R}$:

a) $x^2 - 9x + 18 = 0$

.....

.....

a) $x^3 + 6x^2 + 5x = 0$

.....

.....

b) $x^2 - 6x = -8$

.....

.....

a) $x^2 - 15 = 2x$

.....

.....

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4) Use factorization to facilitate the calculation of the value of each of the following:

a) $11 \times 123 + 11 \times 35 - 11 \times 58$

.....

.....

b) $123 \times 14 + 123 \times 37 - 123$

.....

.....

c) $\frac{5}{7} \times 3 + \frac{5}{7} \times 6 - \frac{5}{7} \times 2$

.....

.....

d) $38^2 - 2 \times 38 \times 8 + 8^2$

.....

.....

e) $(35)^2 - (15)^2$

.....

.....

f) $(87)^2 - (13)^2$

.....

.....

5) The area of a rectangle is $(x^2 + 9x - 22)cm^2$, find possible dimensions for this rectangle in terms of x

.....

.....

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Geometry

Unit 3

Lesson 1

1 Choose the correct answer.

1) If $\overline{AB} \cong \overline{XY}$ then $AB - XY = \dots\dots\dots$

- (A) $2AB$ (B) $2XY$ (C) $4AB$ (D) 0

2) If $\overline{AB} \cong \overline{XY}$ then $AB + XY = \dots\dots\dots$

- (A) $2AB$ (B) $4XY$ (C) $4AB$ (D) 0

3) If $\overline{AB} \cong \overline{CD}$ then $AB = 5$ cm then $2AB + 2CD = \dots\dots\dots$

- (A) 20 (B) 10 (C) 5 (D) 0

4) If $\overline{AB} \cong \overline{XY}$ then $\frac{AB}{XY} = \dots\dots\dots$

- (A) AB (B) XY (C) 1 (D) 0

5) If $\angle A \cong \angle B$, $\angle A$ supplements $\angle B$, then $m(\angle A) = \dots\dots\dots$

- (A) 22.5° (B) 45° (C) 90° (D) 180°

6) If $\angle A \cong \angle B$, $\angle A$ complements $\angle B$, then $m(\angle A) = \dots\dots\dots$

- (A) 22.5° (B) 45° (C) 90° (D) 180°

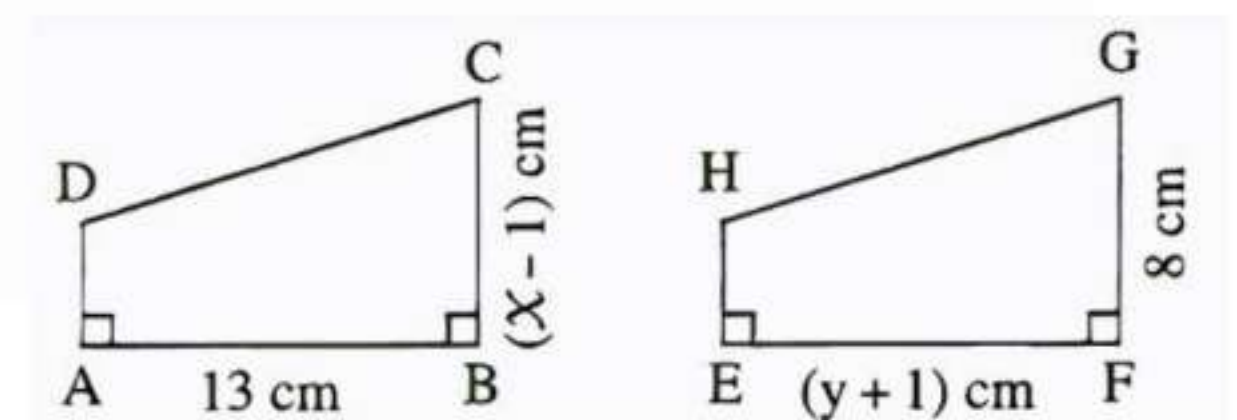
7) If $m(\angle x) + m(\angle y) = 100^\circ$, $\angle x \cong \angle y$, then $m(\angle x) = \dots\dots\dots$

- (A) 25° (B) 50° (C) 100° (D) 200°

8) If the polygon $ABCDE \cong$ the polygon $LMNOP$, then $\overline{NO} \cong \dots\dots\dots$

- (A) $\overline{AB}$ (B) $\overline{BC}$ (C) $\overline{CD}$ (D) $\overline{DE}$

9) In the given figure XYZL is the image of the polygon AABCD by a translation, what is the value of $x + y$?



- (A) 9 (B) 12 (C) 21 (D) 22

10) If two triangle ABC and XYZ are congruent, then $\dots\dots\dots$

- (A) $BC = XZ$ (B) $YX = CA$ (C) $ZY = CB$ (D) $AB = YZ$

11) If $\triangle ABC \cong \triangle XYZ$, then $m(\angle A) + m(\angle B) = 100^\circ$, then $m(\angle Z) = \dots\dots\dots$

- (A) 50° (B) 80° (C) 100° (D) 180°

12) If $\triangle ABC \cong \triangle XYZ$, then $m(\angle B) + m(\angle C) = 100^\circ$, then $m(\angle X) = \dots\dots\dots$

- (A) 40° (B) 50° (C) 80° (D) 100°

13) If $\triangle ABC \cong \triangle LMN$, $m(\angle C) = 90^\circ$, then $m(\angle L) + m(\angle M) = \dots\dots\dots$

- (A) 45° (B) 90° (C) 180° (D) 120°

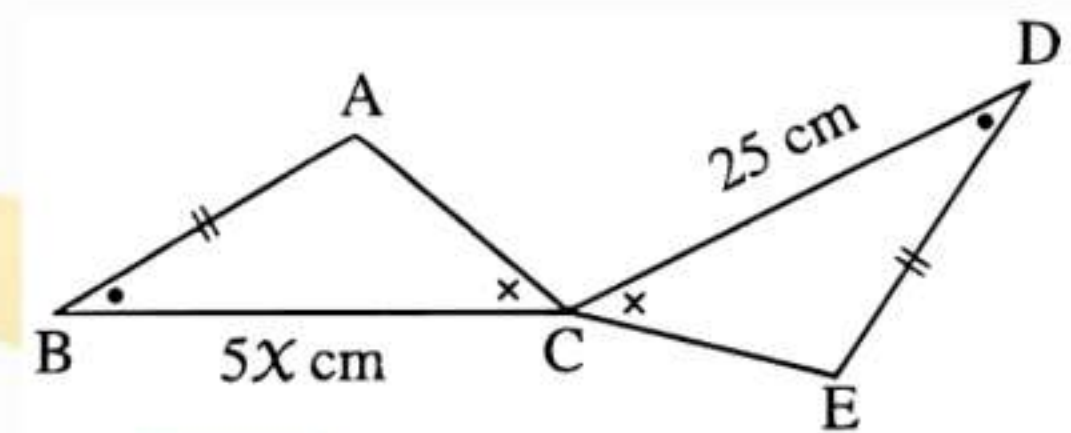
14) If ABCD is a rectangle, then $\overline{AC} \cong \dots\dots\dots$

- (A) $\overline{AB}$ (B) $\overline{BD}$ (C) $\overline{BC}$ (D) $\overline{AD}$

15) If ABCD is a square, then $\overline{AC} \cong \dots\dots\dots$

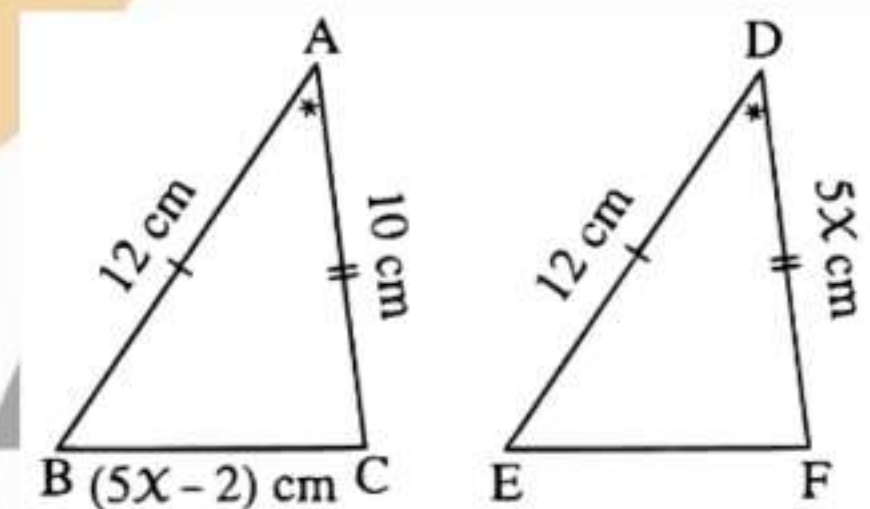
- (A) $\overline{AB}$ (B) $\overline{BD}$ (C) $\overline{BC}$ (D) $\overline{AD}$

16) What is the value of x ?



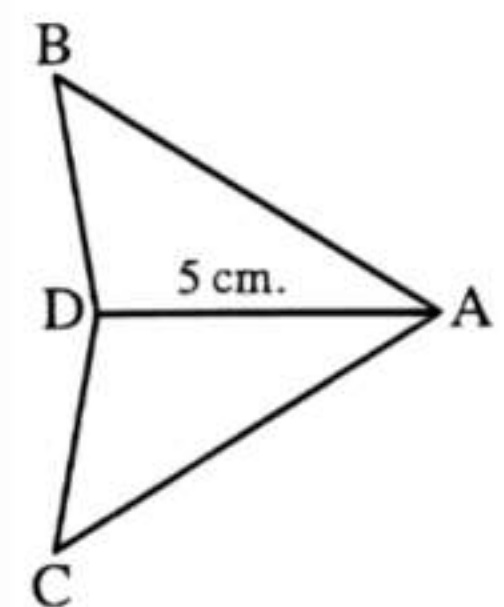
- (A) 5 (B) 10 (C) 20 (D) 25

17) In given figure:
what is the length of $\overline{EF}$?



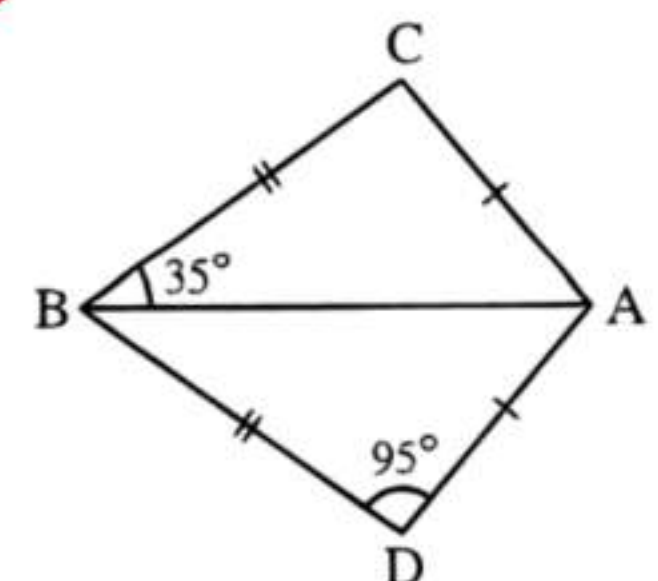
- (A) 6 cm (B) 8 cm (C) 10 cm (D) 12 cm

18) If $\triangle ABC \cong \triangle ACD$, $AB = 5$ cm,
the perimeter of the shape $ABCD = 30$ cm,
then the perimeter $\triangle ABD = \dots\dots\dots$ Cm



- (A) 35 (B) 20 (C) 30 (D) 15

19) In given figure:
 $m(\angle CAD) = \dots\dots\dots$



- (A) 50° (B) 95° (C) 130° (D) 100°

2

Answer the following questions

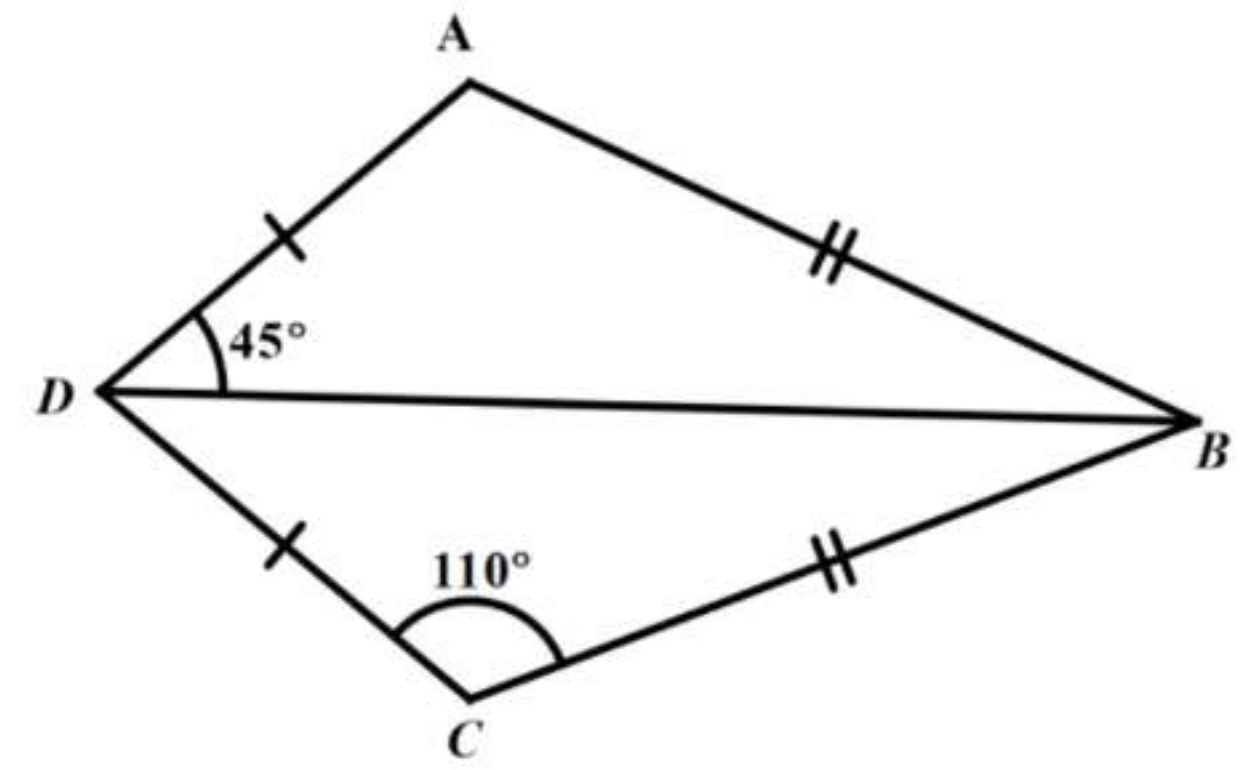
1) In the given figure:

$$AD = CD, AB = CB$$

$$m(\angle ADB) = 45^\circ, m(\angle C) = 110^\circ$$

prove that: $\triangle ABD \cong \triangle CBD$

Find: $m(\angle A)$



2) In the given figure:

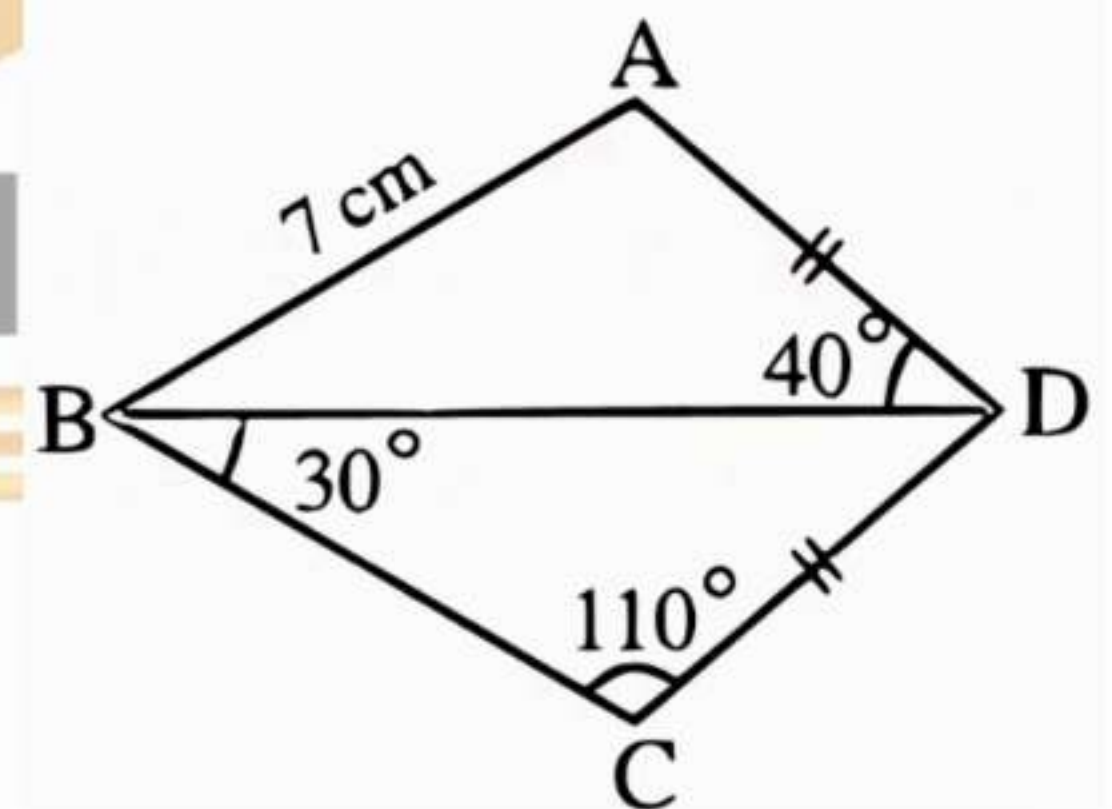
$$CD = AD, m(\angle BCD) = 110^\circ, m(\angle CBD) = 30^\circ$$

$$m(\angle ADB) = 40^\circ$$

Prove that: $\triangle ABD \cong \triangle CBD$

Find the length of $\overline{BC}$

Find the $m(\angle BAD)$

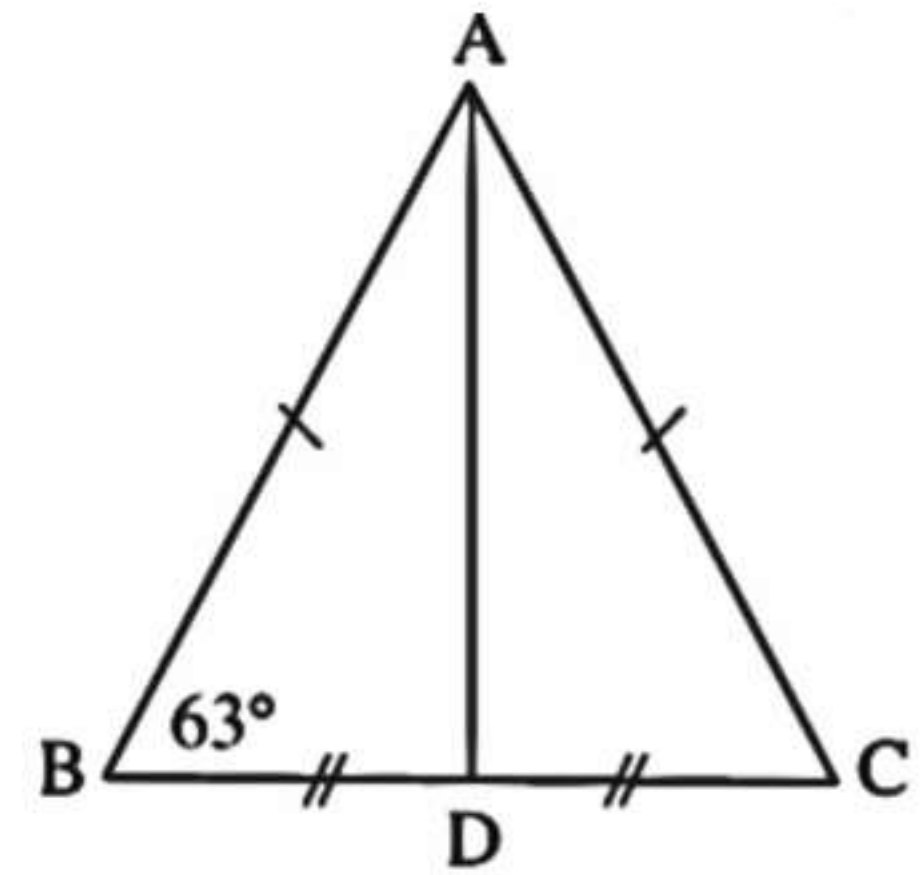


3) The point D is the midpoint of BC ,

$$AB = AC, m(\angle B) = 63^\circ$$

a. Prove that: $\triangle ADB \cong \triangle ADC$

b. Find: $m(\angle DAC)$



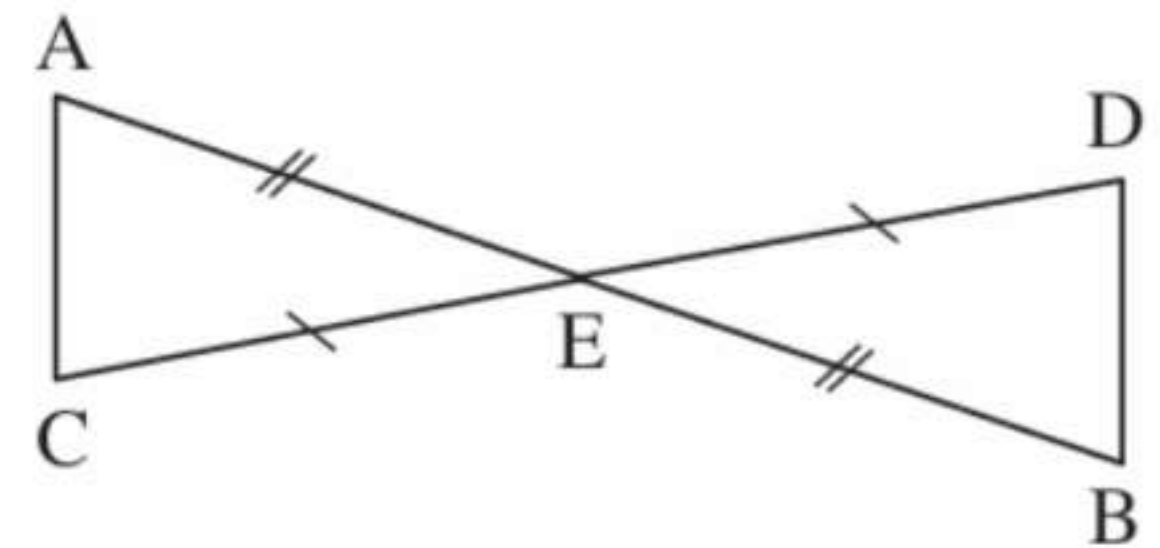
4) In the opposite figure:

E is the midpoint of each of $\overline{AB}$ and $\overline{CD}$

Prove that:

a) $\triangle AEC \cong \triangle BED$

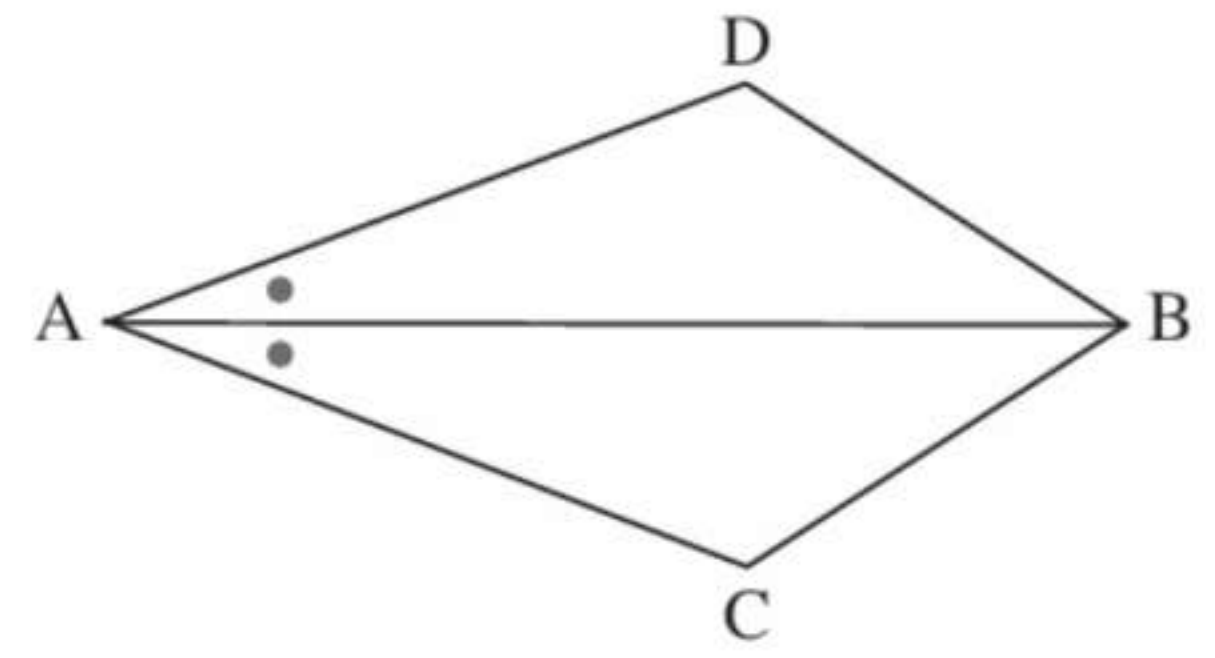
b) $\overline{AC} \parallel \overline{DB}$



5) In the opposite figure:

$\overrightarrow{AB}$ bisects $\angle DAC$, $\angle ACB \cong \angle ADB$

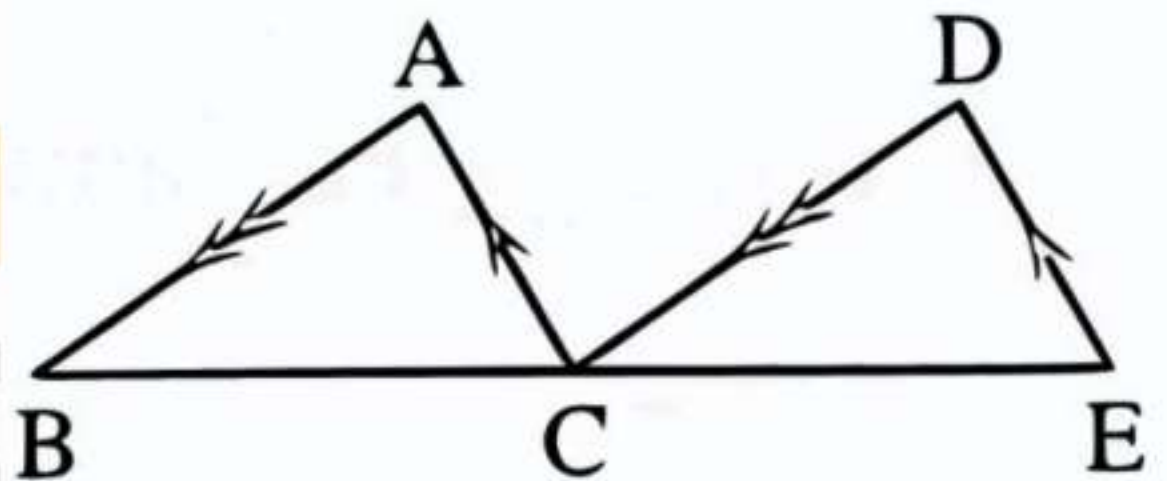
Prove that: $\triangle ACB \cong \triangle ADB$



6) In the given figure:

$\overline{AB} \parallel \overline{DC}$, $\overline{AC} \parallel \overline{DE}$, $\overline{BC} \cong \overline{CE}$

Prove that: $\triangle BAC \cong \triangle CDE$



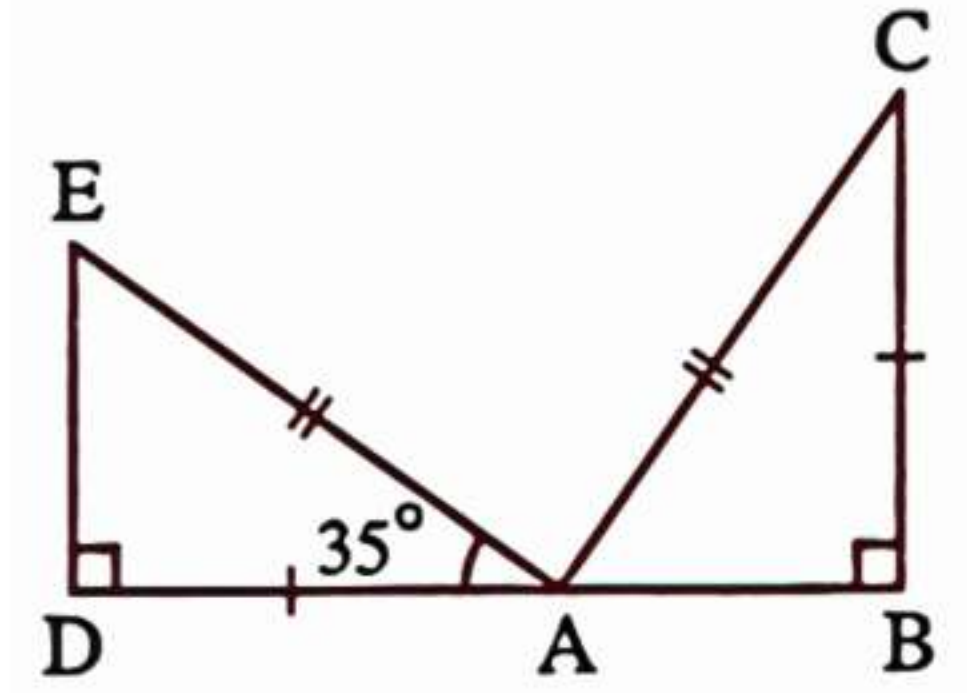
7) In the given figure:

$$m(\angle DAE) = 35^\circ, m(\angle B) = m(\angle D) = 90^\circ,$$

$$BC = AD, AC = AE$$

Prove that: $\triangle ABC \cong \triangle EDA$

Find $m(\angle C)$



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Algebra

Unit 2

1 Choose the correct answer.

1) $6a - 8b = \dots\dots\dots$

- (A) $6(a - 2b)$ (B) $4(2a - 4b)$ (C) $2(3a - 4b)$ (D) $14(a - b)$

2) What is the greatest common factor between the terms of the polynomial $12x^2 - 8x$?

- (A) 2 (B) 4 (C) $2x$ (D) $4x$

3) Which of the following represents the factorization of the polynomial $16x^2 - 24x^3$ by taking out GCF?

- (A) $8x(2x - 3x^2)$ (B) $4x^2(4 - 6x)$
(C) $8x^2(2 - 3x)$ (D) $8(2x^2 - 3x^3)$

4) $x(a + b) + y(a + b) = \dots\dots\dots$

- (A) $(x - y)(a - b)$ (B) $(x + y)(a + b)$
(C) $(x - y)(a + b)$ (D) $(x + y)(a - b)$

5) $x + 2y = 7$, then what is the value of $2x + 4y$?

- (A) 14 (B) 28 (C) 18 (D) 56

6) $n - 5m = 10$, then what is the value of $10m - 2n$?

- (A) 100 (B) -100 (C) 20 (D) -20

7) $3x + 3y = 18$, then what is the value of $x + y$?

- (A) 54 (B) 15 (C) 6 (D) 2

8) $x^2(3a - b) - y(b - 3a) = (3a - b)(\dots\dots\dots)$

- (A) $x^2 + y$ (B) $x^2 - y$ (C) $y - x^2$ (D) $y^2 - x$

9) If $x + y = 10$, $a - b = 7$, then $x(a - b) - y(b - a) = \dots\dots\dots$

- (A) 3 (B) 17 (C) 51 (D) 70

10) $x^2 + x - 20 = \dots\dots\dots$

- (A) $(x - 4)(x + 5)$ (B) $(x + 4)(x + 5)$
(C) $(x - 4)(x - 5)$ (D) $(x + 4)(x - 5)$

11) $x^2 - 20 + x = \dots\dots\dots$

- (A) $(x - 4)(x + 5)$ (B) $(x + 4)(x + 5)$
(C) $(x - 4)(x - 5)$ (D) $(x + 4)(x - 5)$

12) Which of the following represents the factorization of the polynomial $5x - 6 - x^2$?

☐ (A) $(x - 2)(x - 3)$

☐ (B) $(x + 2)(x + 3)$

☐ (C) $-(x + 2)(x + 3)$

☒ (D) $-(x - 2)(x - 3)$

13) If $(x + 3)$ is one of the factors of the trinomial $(x^2 - x - 12)$, then what is the other factor?

☐ (A) $(x + 2)$

☐ (B) $(x - 2)$

☐ (C) $(x + 4)$

☒ (D) $(x - 4)$

14) If $(x - 1)$ is one of the factors of the trinomial $(x^2 - 4x + 3)$, then what is the other factor?

☐ (A) $(x + 3)$

☐ (B) $(x + 4)$

☐ (C) $(x + 1)$

☒ (D) $(x - 3)$

15) If $x + 4y = 8$, $x - 3y = 5$, what is the numerical value of the polynomial $(x^2 + xy - 12y^2)$?

☐ (A) 14

☒ (B) 40

☐ (C) $\frac{8}{2}$

☐ (D) 3

16) If $m + 2n = 7$, $m - 3n = 2$, what is the numerical value of the polynomial $(6n^2 + mn - m^2)$?

☐ (A) 14

☐ (B) 9

☐ (C) -9

☒ (D) -14

17) If $x^2 - 11x + 28 = (x - a)(x - b)$, what is the value of $a + b$?

☐ (A) -16

☐ (B) -11

☒ (C) 11

☐ (D) 16

18) If $x^2 + ax + 15 = (x + 3)(x + b)$, what is the value of ab ?

☐ (A) 5

☐ (B) 8

☒ (C) 13

☐ (D) 40

19) If $x^2 - kx + 18$ is factorizable, then k can be equal to

☐ (A) 10

☐ (B) 12

☐ (C) -12

☒ (D) -11

20) If $x^2 - 3x + c$ is factorizable, then c can be equal to

☐ (A) 1

☒ (B) 2

☐ (C) 4

☐ (D) 6

21) If $x^2 + 7x + a$ is factorizable, then a can be equal to

☐ (A) 8

☒ (B) 10

☐ (C) 18

☐ (D) 49

22) The number can be added to expression: $x^2 + 8x + 5$ to be factorizable is

☐ (A) 1

☒ (B) 2

☐ (C) 4

☐ (D) 5

23) If $x^2 + 2x - 15 = 0$, which of the following is true?

☐ A $x = 3, x = 5$

☒ B $x = 3, x = -5$

☐ C $x = -3, x = 5$

☐ D $x = -3, x = -5$

24) If $(x - 3)(x + 5) = 0$, which of the following is true?

☐ A $x = 3$ or
 $x = 5$

☒ B $x = 3$ or
 $x = -5$

☐ C $x = -3$ or
 $x = 5$

☐ D $x = -3$ or
 $x = -5$

25) If $(x - 5)$ is one of the factors of the trinomial $(2x^2 - 7x - 15)$, then what is the other factor?

☐ A $(x + 2)$

☐ B $(2x - 3)$

☒ C $(2x + 3)$

☐ D $(x - 3)$

26) If $(x + 1)$ is one of the factors of the trinomial $(5x^2 - 2x - 7)$, then what is the other factor?

☐ A $(7x - 5)$

☐ B $(7x + 5)$

☐ C $(5x + 7)$

☒ D $(5x - 7)$

27) If $3x - 2y = 6$, $2x + 3y = 5$, what is the numerical value of the polynomial $(6x^2 + 5xy - 6y^2)$?

☐ A 10

☐ B 11

☐ C 12

☒ D 30

28) Which of the following represents a perfect square?

☐ A $x^2 + 10x + 16$

☒ B $x^2 + 10x + 25$

☐ C $9x^2 - 18x + 1$

☐ D $5x^2 + 18x + 9$

29) Which of the following represents a perfect square?

☐ A $x^2 + 7x + 4$

☐ B $x^2 - 9x + 9$

☒ C $x^2 + 24x + 144$

☐ D $x^2 - 10x - 25$

30) $25x^2 - 90xy + 81y^2 = \dots\dots\dots$

☐ A $(5x + 9y)^2$

☒ B $(5x - 9y)^2$

☐ C $(9x + 5y)^2$

☐ D $(9x - 5y)^2$

31) If the expression: $(kx^2 - 12x + 9)$ is a perfect square, then $k = \dots\dots\dots$

☒ A 4

☐ B ± 4

☐ C 2

☐ D ± 2

32) If the expression: $(ax^2 + 8x + 1)$ is a perfect square, then $a = \dots\dots\dots$

☐ A 4

☐ B 8

☐ C 12

☒ D 16

33) If the expression: $x^2 + 4x + k$ is a perfect square , then $k = \dots\dots\dots$

(A) 1

(B) 2

(C) 3

(D) 4

34) If the expression: $16x^2 - 40x + k^2$ is a perfect square , then $k = \dots\dots\dots$

(A) -5

(B) -5

(C) ± 5

(D) 8

35) If the expression: $x^2 - 6x - m$ is a perfect square , then $m = \dots\dots\dots$

(A) -9

(B) 1

(C) 3

(D) 7

36) If the expression: $4x^2 + ax + 49$ is a perfect square , then $a = \dots\dots\dots$

(A) ± 14

(B) ± 28

(C) ± 7

(D) ± 4

37) If the expression: $9x^2 + kx + 49$ is a perfect square , then $k = \dots\dots\dots$

(A) ± 7

(B) ± 21

(C) ± 42

(D) ± 72

38) If the expression: $4x^2 + kx + 1$ is a perfect square , then $k = \dots\dots\dots$

(A) ± 1

(B) ± 2

(C) ± 4

(D) ± 8

39) If the expression: $(36x^2 + kx + 1)$ is a perfect square , then $k = \dots\dots\dots$

(A) 6

(B) ± 6

(C) 12

(D) ± 12

40) If $x = \sqrt{5} + \sqrt{2}$, $y = \sqrt{5} - \sqrt{2}$, what is the value of the polynomial $(x^2 + 2xy + y^2)$

(A) 8

(B) 20

(C) $2\sqrt{5}$

(D) 10

41) If $x^2 + 2xy + y^2 = 25$, what is the value of $(x + y)$?

(A) 10

(B) ± 10

(C) 5

(D) ± 5

42) If $a^2 + 2ab + b^2 = 36$, what is the value of $(a + b)$?

(A) 6

(B) -6

(C) ± 6

(D) 18

43) A square has an area of $(9x^2 + 30x + 25) \text{ cm}^2$,what is the length of its side in terms of x ?

(A) $(3x + 5) \text{ cm}$

(B) $(5x + 2) \text{ cm}$

(C) $(3x^2 - 5) \text{ cm}$

(D) $(3x^2 + 5) \text{ cm}$

44) A square has an area of $(9x^2 + 48x + 64) \text{ cm}^2$, what is the length of its side in terms of x ?

(A) $(x + 8) \text{ cm}$

(B) $(3x + 4) \text{ cm}$

(C) $(3x + 8) \text{ cm}$

(D) $(x + 24) \text{ cm}$

45) $(73)^2 + 2 \times 27 \times 73 + (27)^2 = \dots\dots\dots$

(A) 100

(B) 1,000

(C) 10,000

(D) 100,000

46) $x^3 - x = \dots\dots\dots$

(A) $(x^2 - x)^2$

(B) $x(x - 1)^2$

(C) $(x^2 - 1)(x - 1)$

(D) $x(x + 1)(x - 1)$

47) If $x^2 - a = (x - 4)(x + 4)$, what is the value of a ?

(A) -16

(B) 16

(C) -8

(D) 8

48) If $x^2 - b^2 = (x - 3)(x + 3)$, what is the value of b ?

(A) ± 1

(B) ± 3

(C) ± 6

(D) ± 9

49) If $ax^2 - b = (3x - 2)(3x + 2)$, what is the value of $a + b$?

(A) -13

(B) 13

(C) -5

(D) 5

50) If $ax^2 - b = (2x + 3)(2x - 3)$, what is the value of $a + b$?

(A) -13

(B) 13

(C) -5

(D) 5

51) If $a + b = 3$, $a - b = 2$, what is the value of $a^2 - b^2$?

(A) 1

(B) 5

(C) 6

(D) -6

52) If $a^2 - b^2 = 6$, $a - b = 2$, what is the value of $a + b$?

(A) 1

(B) 5

(C) 3

(D) -3

53) If $x + 2y = 3$, $x^2 - 4y^2 = 21$, what is the value of $x - 2y$?

(A) 14

(B) 9

(C) 7

(D) 6

54) If $x^2 - y^2 = 16$, $y - x = 2$, what is the value of $x + y$?

(A) 4

(B) 8

(C) -8

(D) 2

55) If $a^2 - b^2 = 45$, $a - b = 5$, what is the value of $\sqrt{a + b}$?

(A) 9

(B) 3

(C) -3

(D) ± 3

56) If $x - y = -2$, $x^2 - y^2 = -16$, what is the arithmetic mean of the two numbers x, y ?

(A) 2

(B) 4

(C) 8

(D) 16

57) If $(75)^2 - (25)^2 = 100 \times \dots\dots\dots$, what is the value of x ?

(A) 100

(B) 50

(C) 25

(D) 75

58) If $(25)^2 - (15)^2 = 10x$, what is the value of x ?

(A) 40

(B) 30

(C) 20

(D) 10

59) If $x^3 - 8 = (x + a)(x^2 + 2x + 4)$, what is the value of a ?

(A) 4

(B) -4

(C) 2

(D) -2

60) If $x^3 + 27 = (x + 3)(x^2 + k + 9)$, what is the value of k ?

(A) $-6x$

(B) $-3x$

(C) $3x$

(D) $6x$

61) If $ax^3 - 27 = (2x - 3)(4x^2 + bx + 9)$, what is the value of ab ?

(A) 6

(B) 12

(C) 24

(D) 48

62) $x^2 - ax + bx - ab = \dots\dots\dots$

(A) $(x - a)(x - b)$

(B) $(x - a)(x + b)$

(C) $(x + a)(x - b)$

(D) $(x + a)(x + b)$

63) $7x - 28 + ax - 4a = \dots\dots\dots$

(A) $(x - 4)(x - 7)$

(B) $(x - 4)(a + 7)$

(C) $(x + 4)(x + 7)$

(D) $(x + 4)(x - 7)$

64) $a + b = 2$, $c + d = 8$, then $ac + ad + bc + bd = \dots\dots\dots$

(A) 16

(B) 6

(C) 10

(D) 12

65) $y^3 + y^2 + y + 1 = \dots\dots\dots$

(A) $(y^2 + y)^2$

(B) $(y^2 + 1)^2$

(C) $(y + 1)(y^2 + 1)$

(D) $(y + 1)^3$

66) $a^2 + 4ab + 4b^2 - 49 = \dots\dots\dots$

(A) $(a + 2b - 7)(a + 2b + 7)$

(B) $(a + 2b + 7)^2$

(C) $(a - 2b - 7)^2$

(D) $(a - 2b - 7)(a + 2b + 7)$

67) $xy + 5x + 7y + 35 = (x + a)(y + b)$, what is the value of $a - b$?

(A) 2

(B) -2

(C) 12

(D) -12

68) $x^3 + 5x^2 - 4x - 20 = (x + a)(x + b)(x + c)$, what is the value of $a + b + c$?

(A) 2

(B) 5

(C) 7

(D) 9

69) When completing the square for $(x^2 + 9)$ we add

(A) $\pm 3x$

(B) $\pm 6x$

(C) $\pm 9x$

(D) $\pm 12x$

70) When completing the square for $(x^2 + 49)$ we add

(A) $\pm 7x$

(B) ± 14

(C) $\pm 14x$

(D) $\pm 28x$

71) When completing the square for $(x^2 + 12x)$ we add

(A) ± 9

(B) ± 36

(C) 9

(D) 36

72) The solution set of the equation: $x^2 - 12x + 36 = 0$ in $\mathbb{R}$ is

(A) {6}

(B) {-6}

(C) {6, -6}

(D) {4, 9}

73) The solution set of the equation: $x^2 - 9x - 10 = 0$ in $\mathbb{R}$ is

(A) {-10, -1}

(B) {10, -1}

(C) {-10, 1}

(D) $\emptyset$

74) The solution set of the equation: $x^2 - 6x - 16 = 0$ in $\mathbb{R}$ is

(A) {2, 6}

(B) {2, 8}

(C) {-2, 8}

(D) {2, -8}

75) The solution set of the equation: $2x^2 - 9x + 9 = 0$ in $\mathbb{R}$ is

(A) {3}

(B) {2, 3}

(C) $\left\{\frac{3}{2}, 3\right\}$

(D) $\left\{-\frac{3}{2}, -3\right\}$

76) The solution set of the equation: $x^2 - 25 = 0$ in $\mathbb{R}$ is

(A) {-5, 5}

(B) {5}

(C) {-5}

(D) $\emptyset$

77) The solution set of the equation: $x^2 + 25 = 0$ in $\mathbb{R}$ is

(A) {-5, 5}

(B) {5}

(C) {-5}

(D) $\emptyset$

78) The solution set of the equation: $x^2 + 81 = 0$ in $\mathbb{R}$ is

(A) {9}

(B) {-9}

(C) {-9, 9}

(D) $\emptyset$

79) The solution set of the equation: $x^2 + 9 = 25$ in $\mathbb{R}$ is

(A) {-5, 5}

(B) {-3, 3}

(C) {-4, 4}

(D) $\emptyset$

2

Answer the following questions

1) Factorization by taking the greatest common factor:

a) $12x^3y^4 + 18x^2y^2 - 24xy^3$

$$6x^2y^2(2x^2y^2 + 3x - 4y)$$

b) $a(b + 5) + 2(b + 5)$

$$(b+5)(a+2)$$

c) $(2x + 5)^2 - 4(2x + 5)$

$$(2x+5)(2x+5-4)$$

$$(2x+5)(2x+1)$$

2) Factorize each of the following completely:

a) $x^2 - 3x - 10$

$$(x-5)(x+2)$$

b) $a^2 + 9ab + 20b^2$

$$(a+4b)(a+5b)$$

c) $x^2 + 21 - 10x$

$$x^2 - 10x + 21$$

$$(x-7)(x+3)$$

d) $3x^2 - 21x + 30$

$$3(x^2 - 7x + 10)$$

$$3(x-5)(x-2)$$

e) $-x^2 + 3x + 40$

$$-(x^2 - 3x - 40)$$

$$-(x-8)(x+5)$$

f) $3x^2 + 2x - 5$

$$(x-1)(3x+5)$$

g) $6x^2 - 23x - 35$

$$(x-5)(6x+7)$$

h) $x^2 - 4$

$$(x-2)(x+2)$$

i) $4x^2 - 9$

$$(2x-3)(2x+3)$$

j) $k^2 - 64m^2$

$$(k-8m)(k+8m)$$

k) $25 - 9x^2$

$$(5-3x)(5+3x)$$

l) $(x+3)^2 - 25$

$$(x+3-5)(x+3+5)$$

$$(x-2)(x+8)$$

m) $x^3 + 1$

$$(x+1)(x^2-x+1)$$

n) $y^3 - 8$

$$(y-2)(y^2+2y+4)$$

o) $x^3 + 64$

$$(x+4)(x^2-4x+16)$$

p) $x^3y^3 - 27$

$$(xy-3)(x^2y^2+3xy+9)$$

q) $3x^3 + 24$

$$3(x^3+8)$$

$$3(x+2)(x^2-2x+4)$$

r) $x^4 + 8x$

$$x(x^3 + 8)$$

$$x(x+2)(x^2 - 2x + 4)$$

s) $ab + bd + ae + de$

$$\underline{b(a+d)} + \underline{e(a+d)}$$

$$(a+d)(b+e)$$

t) $7x - 28 + ax - 4a$

$$\underline{7(x-4)} + \underline{a(x-4)}$$

$$(x-4)(7+a)$$

u) $3x^3 + 2x^2 - 3x - 2$

$$x^2(3x+2) - (3x+2)$$

$$(3x+2)(x^2 - 1)$$

$$(3x+2)(x-1)(x+1)$$

v) $x^2 - 6x - y^2 + 6y$

$$\underline{x^2 - y^2} - \underline{6x + 6y}$$

$$(x-y)(x+y) - 6(x+y)$$

$$(x+y)(x-y-6)$$

w) $4m^4 + 1$

$$\underline{4m^4 + 4m^2 + 1} - 4m^2$$

$$(2m^2 + 1)^2 - 4m^2$$

$$(2m^2 + 1 - 2m)(2m^2 + 1 + 2m)$$

x) $4x^4 + 81$

$$\underline{4x^4 + 16x^2 + 81} - 16x^2$$

$$(2x^2 + 9)^2 - 16x^2$$

$$(2x^2 + 9 - 4x)(2x^2 + 9 + 4x)$$

$$\begin{aligned} m.f &= \pm 2 \times \sqrt{4m^4} \times \sqrt{1} \\ &= \pm 2 \times 2m^2 \times 1 \\ &= \pm 4m^2 \end{aligned}$$

$$\begin{aligned} m.f &= \pm 2 \times \sqrt{4x^4} \times \sqrt{81} \\ &= \pm 2 \times (2x^2) \times (9) \\ &= \pm 36x^2 \end{aligned}$$

3) Find the solution set of each of the following in $\mathbb{R}$:

a) $x^2 - 9x + 18 = 0$

$$(x-3)(x-6) = 0$$

$$x-3=0 \quad \vee \quad x-6=0$$

$$x=3 \quad \vee \quad x=6$$

the s.s = $\{3, 6\}$

a) $x^3 + 6x^2 + 5x = 0$

$$x(x^2 + 6x + 5) = 0$$

$$x(x+5)(x+1) = 0$$

$$x=0 \quad \vee \quad x+5=0 \quad \vee \quad x+1=0$$

$$x=-5 \quad \vee \quad x=-1$$

the s.s = $\{0, -5, -1\}$

b) $x^2 - 6x = -8$

$$x^2 - 6x + 8 = 0$$

$$(x+2)(x-4) = 0$$

$$x+2=0 \quad \vee \quad x-4=0$$

$$x=-2 \quad \vee \quad x=4$$

the s.s = $\{-2, 4\}$

a) $x^2 - 15 = 2x$

$$x^2 - 2x - 15 = 0$$

$$(x-5)(x+3) = 0$$

$$x-5=0 \quad \vee \quad x+3=0$$

$$x=5 \quad \vee \quad x=-3$$

the s.s = $\{5, -3\}$

4) Use factorization to facilitate the calculation of the value of each of the following:

a) $11 \times 123 + 11 \times 35 - 11 \times 58$

$$11[123 + 35 - 58]$$

$$11 \times 100 = 1,100$$

b) $123 \times 14 + 123 \times 37 - 123$

$$123[14 + 37 - 1]$$

$$123 \times 50 = 6,150$$

c) $\frac{5}{7} \times 3 + \frac{5}{7} \times 6 - \frac{5}{7} \times 2$

$$\frac{5}{7}[3 + 6 - 2]$$

$$\frac{5}{7} \times 7 = 5$$

d) $38^2 - 2 \times 38 \times 8 + 8^2$

$$(38 - 8)^2 = 30^2 = 900$$

e) $(35)^2 - (15)^2$

$$(35 - 15)(35 + 15)$$

$$1225 - 225 = 1000$$

f) $(87)^2 - (13)^2$

$$(87 - 13)(87 + 13)$$

$$74 \times 100 = 7400$$

5) The area of a rectangle is $(x^2 + 9x - 22) \text{ cm}^2$, find possible dimensions for this rectangle in terms of x

$$x^2 + 9x - 22 = (x - 2)(x + 11)$$

the dimensions are $(x - 2) \text{ cm}$

$(x + 11) \text{ cm}$

Math prep 2

2026



ENG.ESLAM EMAM
MATH TEACHER

Geometry

Unit 3

Lesson 1

1 Choose the correct answer.

1) If $\overline{AB} \cong \overline{XY}$ then $AB - XY = \dots\dots\dots$

- (A) $2AB$ (B) $2XY$ (C) $4AB$ (D) 0

2) If $\overline{AB} \cong \overline{XY}$ then $AB + XY = \dots\dots\dots$

- (A) $2AB$ (B) $4XY$ (C) $4AB$ (D) 0

3) If $\overline{AB} \cong \overline{CD}$ then $AB = 5$ cm then $2AB + 2CD = \dots\dots\dots$

- (A) 20 (B) 10 (C) 5 (D) 0

4) If $\overline{AB} \cong \overline{XY}$ then $\frac{AB}{XY} = \dots\dots\dots$

- (A) AB (B) XY (C) 1 (D) 0

5) If $\angle A \cong \angle B$, $\angle A$ supplements $\angle B$, then $m(\angle A) = \dots\dots\dots$

- (A) 22.5° (B) 45° (C) 90° (D) 180°

6) If $\angle A \cong \angle B$, $\angle A$ complements $\angle B$, then $m(\angle A) = \dots\dots\dots$

- (A) 22.5° (B) 45° (C) 90° (D) 180°

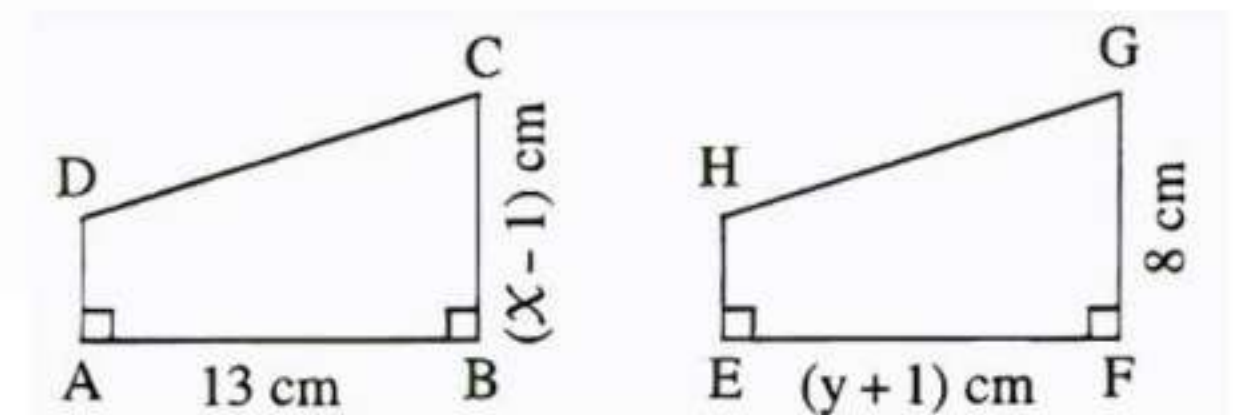
7) If $m(\angle x) + m(\angle y) = 100^\circ$, $\angle x \cong \angle y$, then $m(\angle x) = \dots\dots\dots$

- (A) 25° (B) 50° (C) 100° (D) 200°

8) If the polygon $ABCDE \cong$ the polygon $LMNOP$, then $\overline{NO} \cong \dots\dots\dots$

- (A) $\overline{AB}$ (B) $\overline{BC}$ (C) $\overline{CD}$ (D) $\overline{DE}$

9) In the given figure XYZL is the image of the polygon AABCD by a translation, what is the value of $x + y$?



- (A) 9 (B) 12 (C) 21 (D) 22

10) If two triangle ABC and XYZ are congruent, then $\dots\dots\dots$

- (A) $BC = XZ$ (B) $YX = CA$ (C) $ZY = CB$ (D) $AB = YZ$

11) If $\triangle ABC \cong \triangle XYZ$, then $m(\angle A) + m(\angle B) = 100^\circ$, then $m(\angle Z) = \dots\dots\dots$

- (A) 50° (B) 80° (C) 100° (D) 180°

12) If $\triangle ABC \cong \triangle XYZ$, then $m(\angle B) + m(\angle C) = 100^\circ$, then $m(\angle X) = \dots\dots\dots$

(A) 40°

(B) 50°

(C) 80°

(D) 100°

13) If $\triangle ABC \cong \triangle LMN$, $m(\angle C) = 90^\circ$, then $m(\angle L) + m(\angle M) = \dots\dots\dots$

(A) 45°

(B) 90°

(C) 180°

(D) 120°

14) If ABCD is a rectangle, then $\overline{AC} \cong \dots\dots\dots$

(A) $\overline{AB}$

(B) $\overline{BD}$

(C) $\overline{BC}$

(D) $\overline{AD}$

15) If ABCD is a square, then $\overline{AC} \cong \dots\dots\dots$

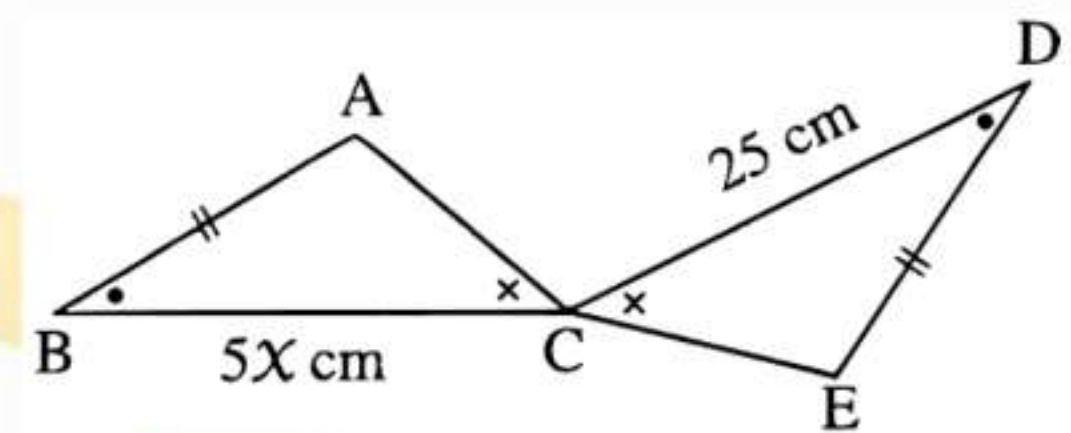
(A) $\overline{AB}$

(B) $\overline{BD}$

(C) $\overline{BC}$

(D) $\overline{AD}$

16) What is the value of x ?



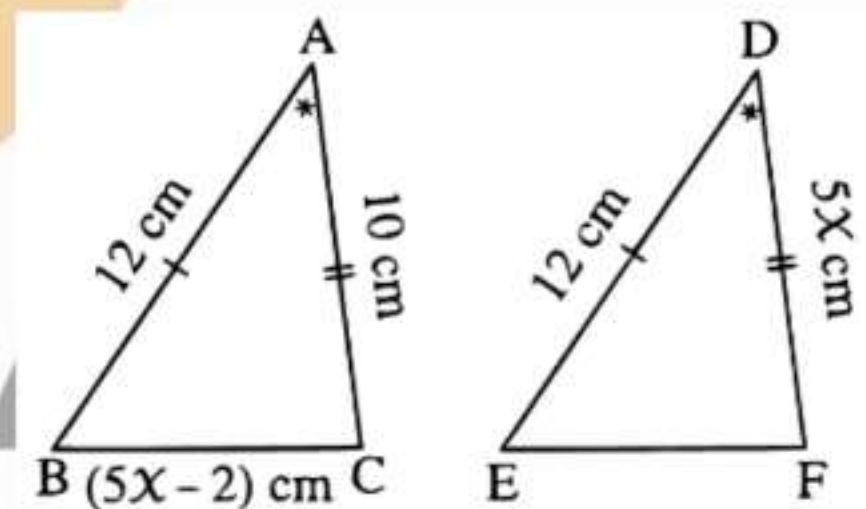
(A) 5

(B) 10

(C) 20

(D) 25

17) In given figure:
what is the length of $\overline{EF}$?



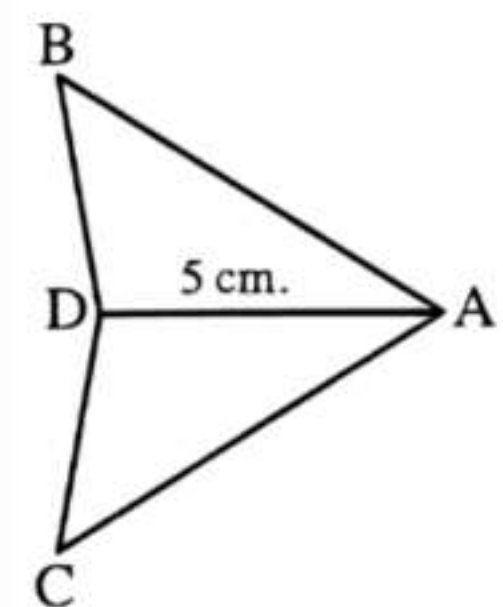
(A) 6 cm

(B) 8 cm

(C) 10 cm

(D) 12 cm

18) If $\triangle ABC \cong \triangle ACD$, $AB = 5$ cm,
the perimeter of the shape $ABCD = 30$ cm,
then the perimeter $\triangle ABD = \dots\dots\dots$ Cm



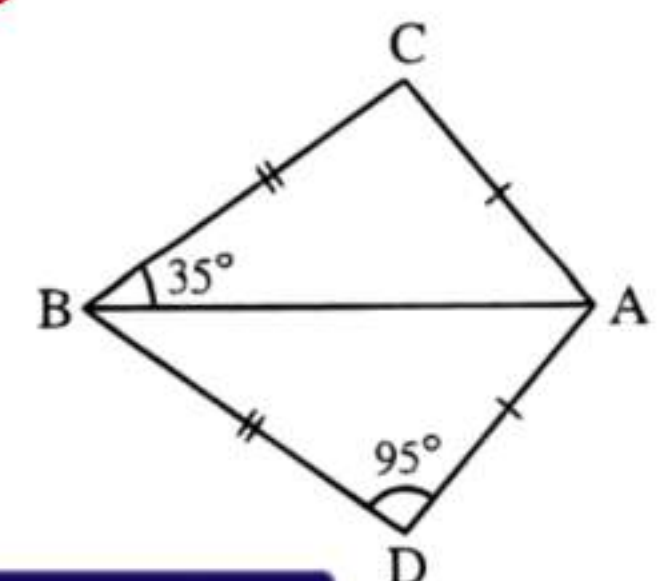
(A) 35

(B) 20

(C) 30

(D) 15

19) In given figure:
 $m(\angle CAD) = \dots\dots\dots$



(A) 50°

(B) 95°

(C) 130°

(D) 100°

2

Answer the following questions

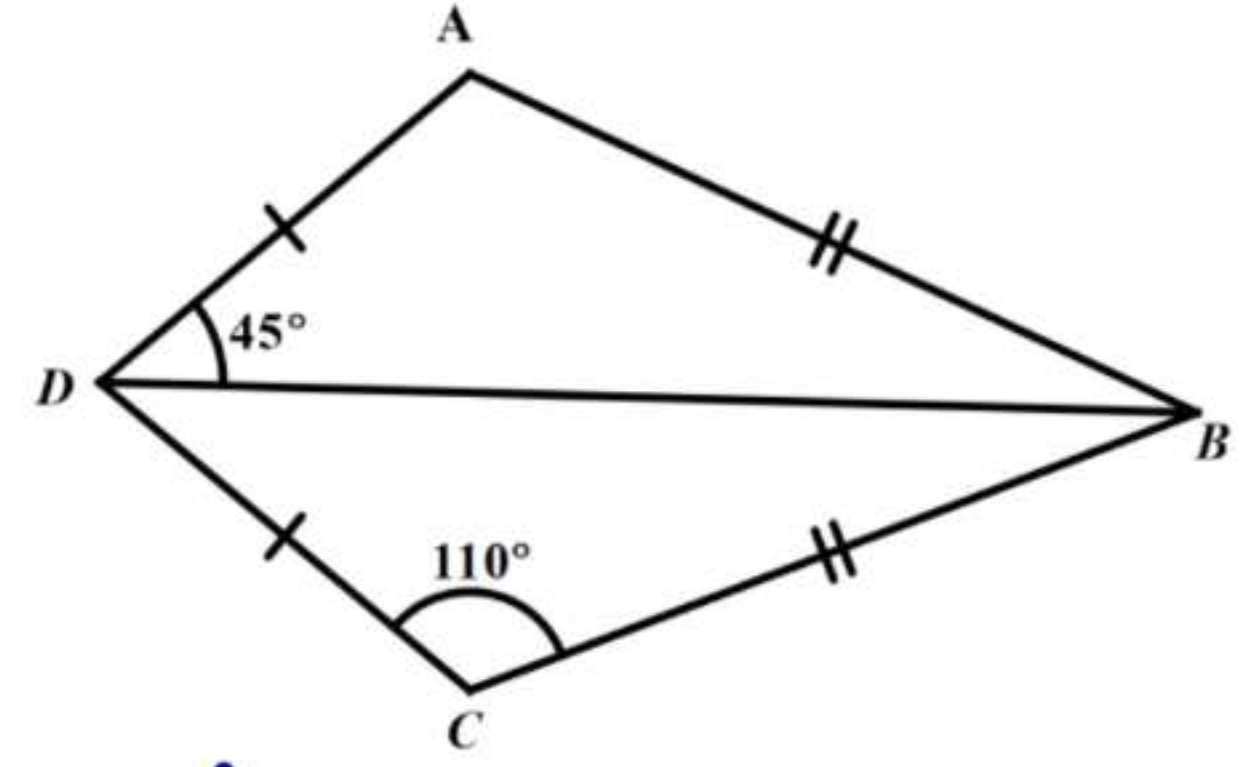
1) In the given figure:

$$AD = CD, AB = CB$$

$$m(\angle ADB) = 45^\circ, m(\angle C) = 110^\circ$$

prove that: $\triangle ABD \cong \triangle CBD$

Find: $m(\angle A)$



في الورقة الخاصة

2) In the given figure:

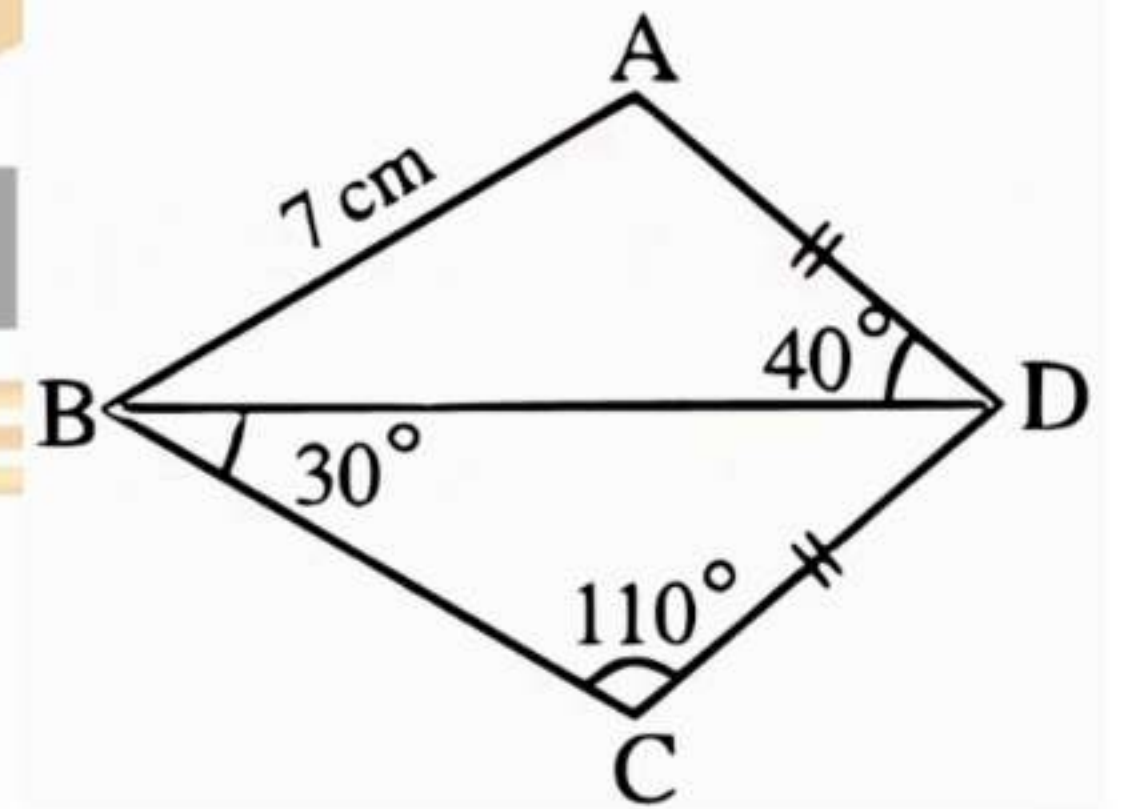
$$CD = AD, m(\angle BCD) = 110^\circ, m(\angle CBD) = 30^\circ$$

$$m(\angle ADB) = 40^\circ$$

Prove that: $\triangle ABD \cong \triangle CBD$

Find the length of $\overline{BC}$

Find the $m(\angle BAD)$



في الورقة الخاصة

[1] In $\triangle ABD, \triangle CBD$:

$$\begin{cases} AD = CD \\ AB = CB \\ DB \text{ is a Common Side} \end{cases}$$

$$\therefore \triangle ABD \cong \triangle CBD$$

$$\therefore m(\angle A) = m(\angle C) = 110^\circ$$

[2] In $\triangle BCD$

$$\begin{aligned} \therefore m(\angle CDB) &= 180^\circ - [110 + 30] \\ &= 40^\circ \end{aligned}$$

In $\triangle ABD, \triangle CBD$:

$$\begin{cases} AD = CD \\ m(\angle ADB) = m(\angle CDB) \\ BD \text{ is a Common Side} \end{cases}$$

$$\therefore \triangle ADB \cong \triangle CBD$$

$$\therefore BC = DA = 7 \text{ cm}$$

$$\therefore m(\angle BAD) = m(\angle DCB) = 110^\circ$$

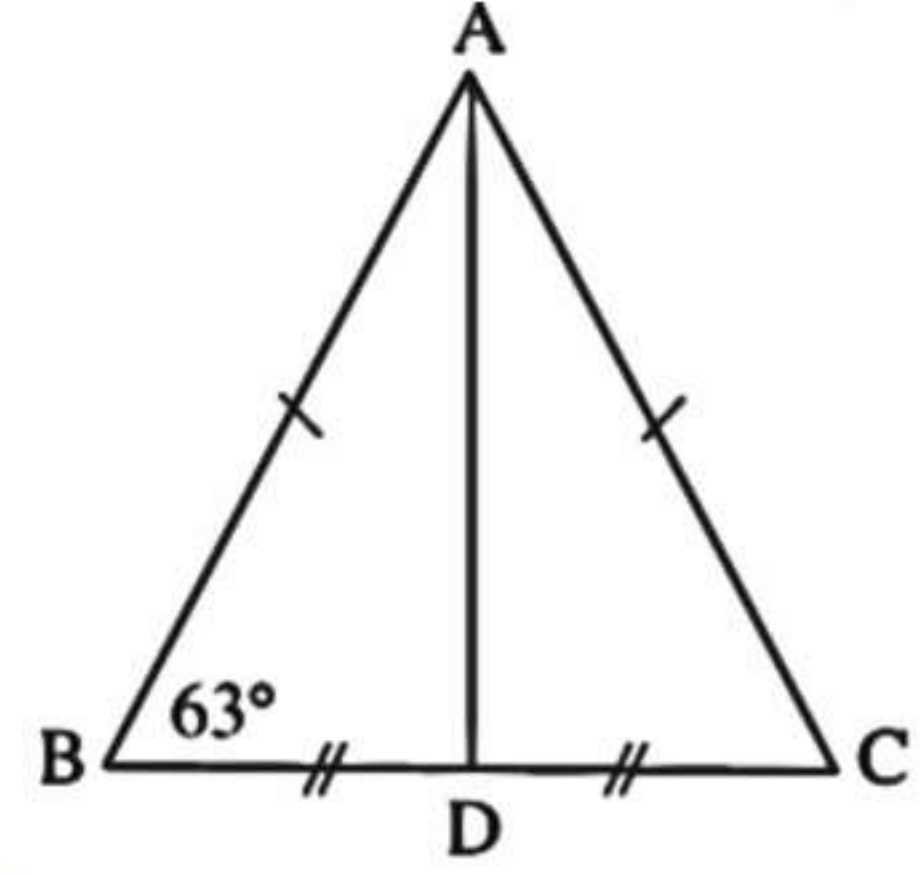
~~*~~

3) The point D is the midpoint of BC ,

$$AB = AC, m(\angle B) = 63^\circ$$

a. Prove that: $\triangle ADB \cong \triangle ADC$

b. Find: $m(\angle DAC)$



في التورية الخاصة

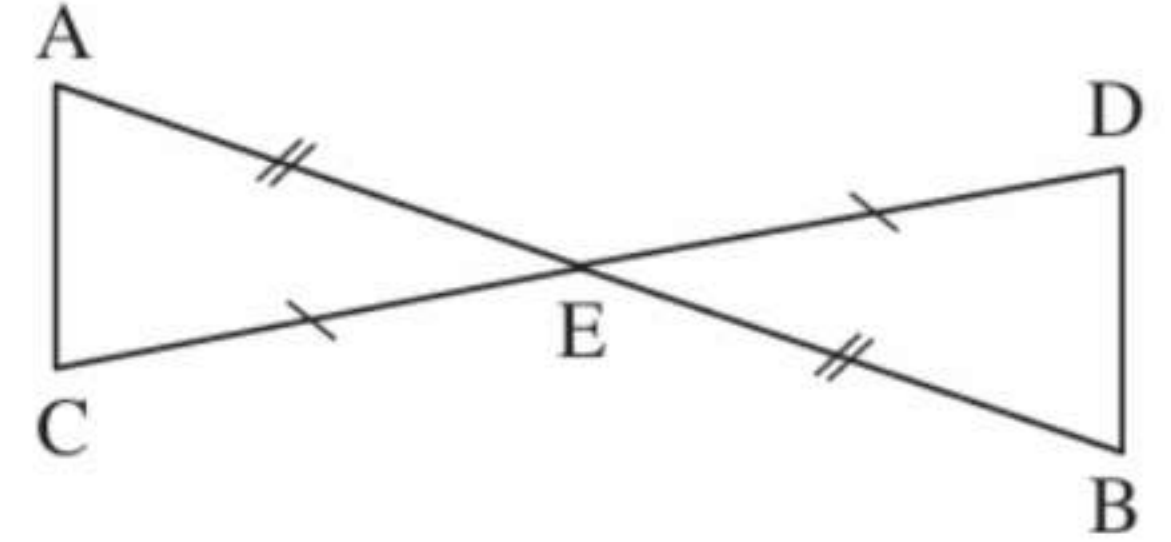
4) In the opposite figure:

E is the midpoint of each of $\overline{AB}$ and $\overline{CD}$

Prove that:

a) $\triangle AEC \cong \triangle BED$

b) $\overline{AC} \parallel \overline{DB}$



في التورية الخاصة

Ex In $\triangle ADB, \triangle ADC$

$$\left\{ \begin{array}{l} AB = AC \\ BD = CD \\ AD \text{ is a Common Side} \end{array} \right.$$

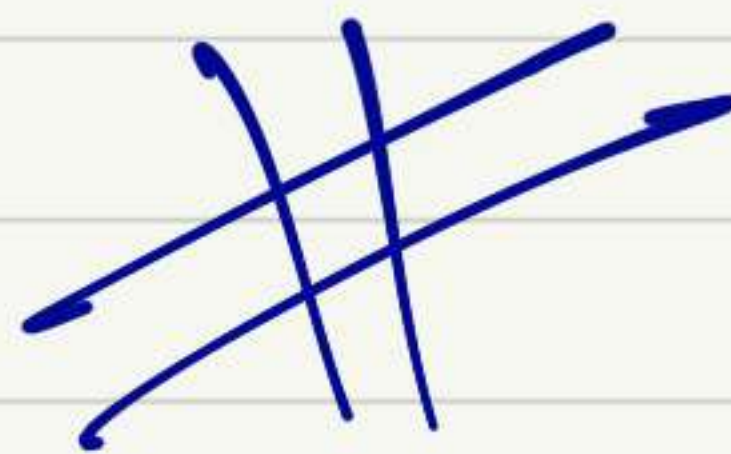
$$\therefore \triangle ADB \cong \triangle ADC$$

$$\therefore m(\angle ADC) = m(\angle ADB) = 90^\circ$$

$$\therefore m\angle B = m\angle C = 63^\circ$$

In $\triangle ADC$

$$\begin{aligned} \therefore m(\angle DAC) &= 180^\circ - [90^\circ + 63^\circ] \\ &= 27^\circ \end{aligned}$$



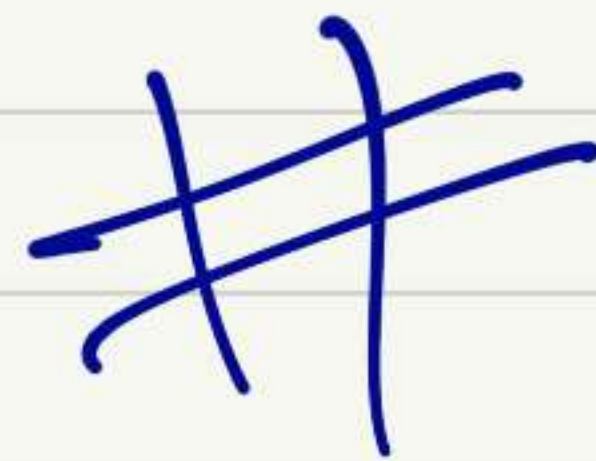
[4] In $\triangle AEC$, $\triangle BED$:

$$\begin{cases} AE = BE \\ CE = DE \\ m(\angle AEC) = m(\angle BED) = 90^\circ \\ \text{V.o.A} \end{cases}$$

$$\therefore \triangle AEC \cong \triangle BED$$

$$\therefore m(\angle A) = m(\angle B) \text{ alternating angles}$$

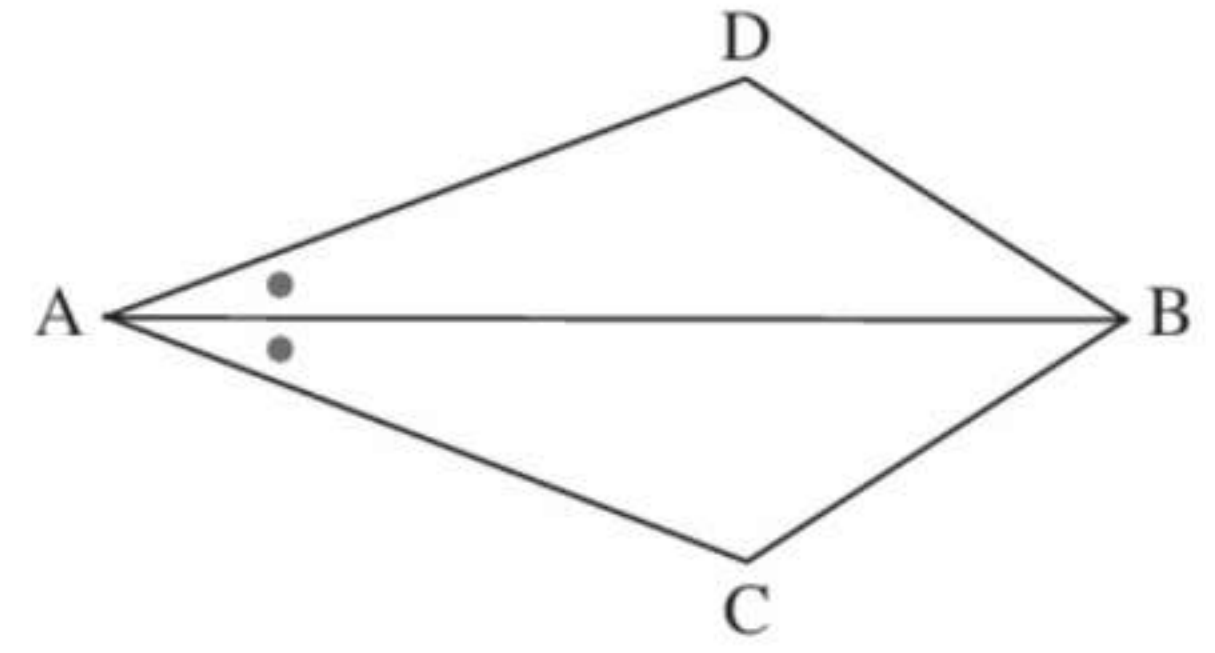
$$\therefore \overline{AC} \parallel \overline{DB}$$



5) In the opposite figure:

$\overrightarrow{AB}$ bisects $\angle DAC$, $\angle ACB \cong \angle ADB$

Prove that: $\Delta ACB \cong \Delta ADB$

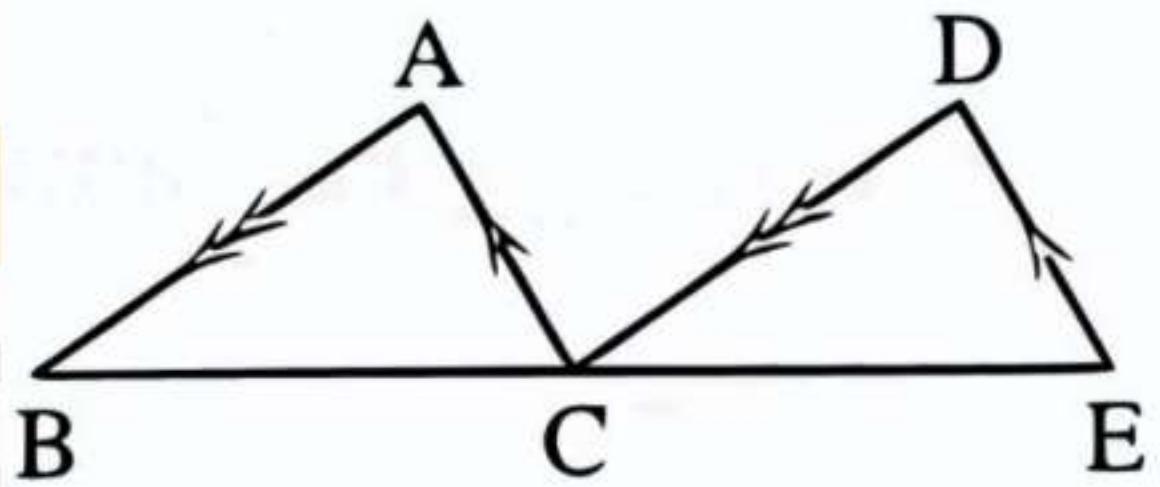


في الورقة القادمة

6) In the given figure:

$\overline{AB} \parallel \overline{DC}$, $\overline{AC} \parallel \overline{DE}$, $\overline{BC} \cong \overline{CE}$

Prove that: $\Delta BAC \cong \Delta CDE$



في الورقة القادمة

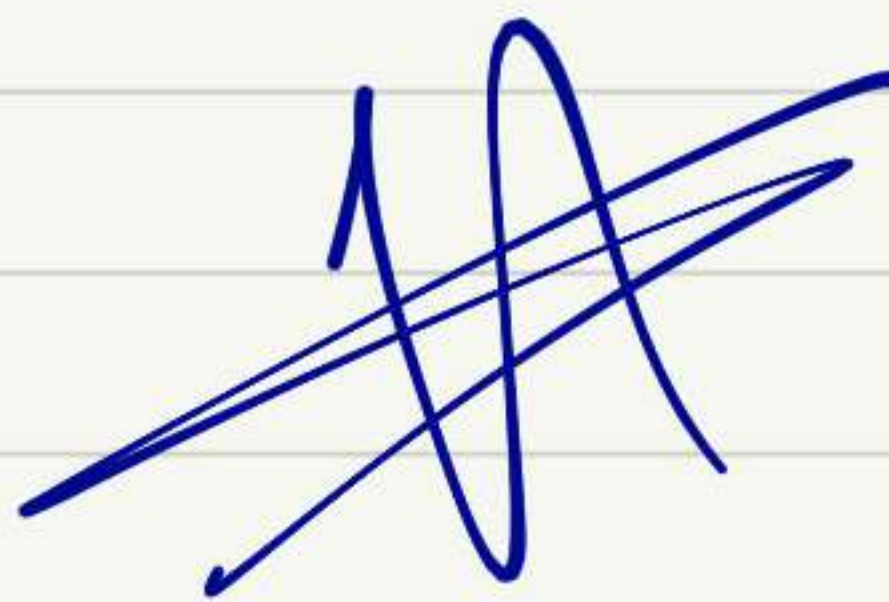
[5] $\therefore \overrightarrow{AB}$ bisects $\angle DAC$

$$\therefore m(\angle DAB) = m(\angle CAB)$$

In $\triangle ACB, \triangle ADB$:

$$\left\{ \begin{array}{l} m(\angle DAB) = m(\angle CAB) \\ m(\angle ACB) = m(\angle ADB) \\ AB \text{ is a Common Side} \end{array} \right.$$

$$\therefore \triangle ACB \cong \triangle ADB$$



⑥ $\because \overline{AB} \parallel \overline{DC}$, BE is a transversal

$$\therefore m(\angle B) = m(\angle DCE)$$

Corresponding angles

$\because \overline{AC} \parallel \overline{DE}$, $\overline{EB}$ is a transversal

$$\therefore m(\angle E) = m(\angle ACB)$$

Corresponding angles

In $\triangle BAC$, $\triangle CDE$:

$$\begin{cases} m(\angle B) = m(\angle DCE) \\ m(\angle E) = m(\angle ACB) \\ BC = CE \end{cases}$$

$$\therefore \triangle BAC \cong \triangle CDE$$



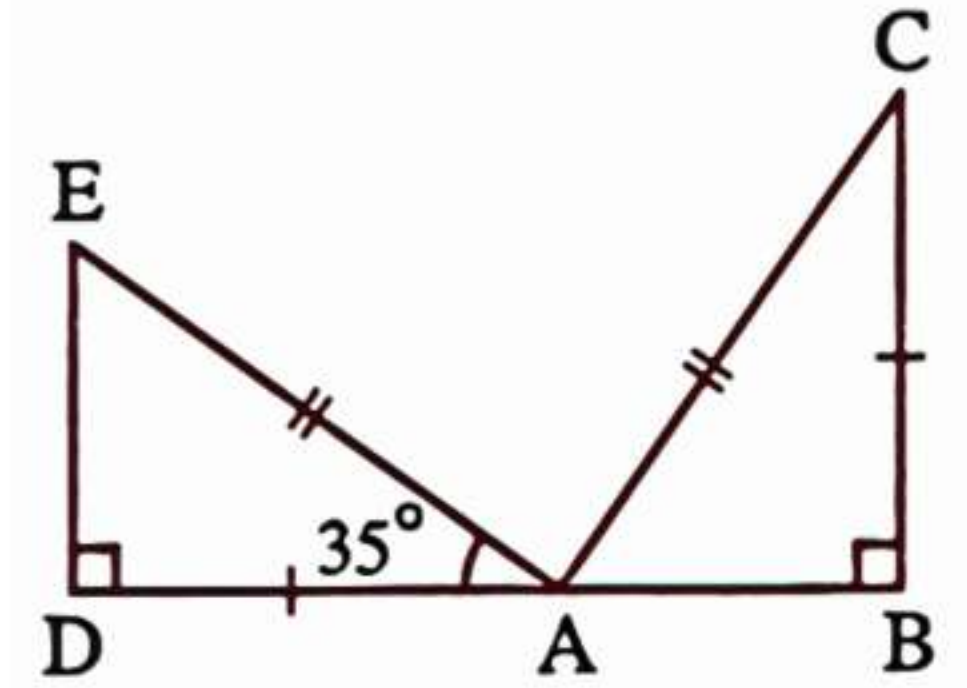
7) In the given figure:

$$m(\angle DAE) = 35^\circ, m(\angle B) = m(\angle D) = 90^\circ,$$

$$BC = AD, AC = AE$$

Prove that: $\triangle ABC \cong \triangle EDA$

Find $m(\angle C)$



In $\triangle ABC, \triangle EDA$:

$$m(\angle B) = m(\angle D) = 90^\circ$$

$$BC = AD$$

$$AC = AE$$

$$\therefore \triangle ABC \cong \triangle EDA$$

$$\therefore m(\angle EAD) = m(\angle ACB) = 35^\circ$$

In $\triangle ABC$

$$\begin{aligned} \therefore m(\angle C) &= 180 - [90^\circ + 35^\circ] \\ &= 55^\circ \end{aligned}$$

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حمل الآن

مجاناً وحصرياً

المراجعة رقم (4)

اختبار شهر نوفمبر



Q1: Choose the correct answer

1 If the expression : $x^2 + b x - 10$ can be factorized, then b may be equal to

(a) 3

(b) 2

(c) 1

(d) -1

2 If $(X + 3)$ is one factor of the expression : $x^2 + x - 6$, then the other factor is

(a) $x + 3$ (b) $x - 4$ (c) $x + 1$ (d) $x - 2$

3 If $x^3 + 27 = (x + 3)(x^2 + k + 9)$, then $k =$

(a) $-6x$ (b) $-3x$ (c) $3x$ (d) $6x$

4 If $x + y = 3$, $x^2 - xy + y^2 = 12$, then $x^3 + y^3 =$

(a) 4

(b) 36

(c) 9

(d) 24

5 For the expression: $x^2 - 2x - k$ can be factorized, then $k \neq$

(a) 8

(b) 3

(c) 6

(d) 15

6 If $(x - 3)$ is a factor of the expression: $x^2 - 4x + 3$, then the other factor is

(a) $(x + 1)$ (b) $(x - 1)$ (c) $(x + 3)$ (d) $(x - 3)$

7 If $(2a - 5)(3a - 2) = 6a^2 + k a + 10$, then $k =$

(a) 15

(b) 19

(c) -19

(d) 4

8 If $a^2 + b^2 = 15$, $2ab = 10$, Then $a + b =$

(a) 5

(b) -5

(c) 25

(d) ± 5

9 If $x^2 - 2xy + y^2 = 25$, then $X - y =$

(a) 25

(b) 5

(c) -5

(d) ± 5 

10 The S.S of the equation: $x^3 - x^2 = 0$ in R is

- (a) $\{0\}$ (b) $\{0, 1\}$ (c) $\{1\}$ (d) $\emptyset$

11 If $x - y = 5$, $x^2 + xy + y^2 = 7$, then $x^3 - y^3 = \dots\dots\dots$

- (a) 2 (b) 7 (c) 12 (d) 35

12 If $x^2 - a = (x - 5)(x + 5)$, Then $a = \dots\dots\dots$

- (a) 5 (b) -25 (c) 25 (d) 10

13 The solution set of the equation: $2x^2 - 9x + 9 = 0$ in R is

- (a) $\{3\}$ (b) $\{2, 3\}$ (c) $\{\frac{3}{2}, 3\}$ (d) $\{-\frac{3}{2}, -3\}$

14 If the expression $x^2 + ax + 64$ is a perfect square, then $a = \dots\dots\dots$

- (a) 16 (b) ± 16 (c) 8 (d) ± 8

15 If $x^3 + y^3 = 24$, $x + y = 6$, then $x^2 - xy + y^2 = \dots\dots\dots$

- (a) 4 (b) 12 (c) 18 (d) 30

16 If $x^2 + 4x + k$ is a perfect square, then $k = \dots\dots\dots$

- (a) 1 (b) 2 (c) 3 (d) 4

17 If the polynomial $(9x^2 + bx + 1)$ is a perfect square, then what is the value of b ?

- (a) ± 9 (b) ± 4 (c) ± 6 (d) ± 12

18 The factorization of $x^3 + 2x^2 - 4x - 8$ is

- (a) $(x^2 - 4)(x - 2)$ (b) $(x - 2)(x + 2)^2$
(c) $(x + 2)(x - 2)$ (d) $(x^2 + 4)(x - 2)$



- 19 If $(x + b)(x + 3) = x^2 + ax + 15$, then what is the value of $a + b$?
- (a) 3 (b) 12 (c) 13 (d) 5
- 20 If $x^2 + b = 12$, $x + a = 6$, then the numerical value of the expression $x^3 + ax^2 + bx + ab$ equals
- (a) 6 (b) 12 (c) 2 (d) 72
- 21 Completing the perfect square for the expression: $x^2 + 9$ we add to it
- (a) $\pm 12x$ (b) $\pm 6x$ (c) 12 (d) 6
- 22 If $a + b = 5$, $a^2 - b^2 = 15$, then what is the value of $a - b$?
- (a) 20 (b) 3 (c) 75 (d) 10
- 23 If $(x + a)(y + b) = xy + 5x + 7y + 35$, then what is the value of ab ?
- (a) 2 (b) 12 (c) 35 (d) 17
- 24 A square has an area of $16x^4 + 64x^2 + 64 \text{ cm}^2$. What is the length of its side in terms of x ?
- (a) $(4x + 8) \text{ cm}$ (b) $(8x + 4) \text{ cm}$ (c) $(4x^2 + 8) \text{ cm}$ (d) $(8x^2 + 4) \text{ cm}$
- 25 If $ax^2 - b = (3x - 2)(3x + 2)$, what is the value of $a + b$?
- (a) -13 (b) 13 (c) -5 (d) 5
- 26 When completing the square for: $(x^2 + 9)$ add
- (a) $\pm 3x$ (b) $\pm 6x$ (c) $\pm 9x$ (d) $\pm 12x$
- 27 If $(x - 2)(x + 5) = 0$, which of the following is correct?
- (a) $x = 2$ or $x = 5$ (b) $x = -2$ or $x = 5$ (c) $x = -2$ or $x = -5$ (d) $x = 2$ or $x = -5$



Q2: Answer The Following

1 $x^3 - 8 = (\dots\dots\dots) (x^2 + 2x + \dots\dots)$

2 $8x^3 - \dots\dots\dots = (\dots\dots - \dots\dots)(\dots\dots + \dots\dots + 9)$

3 Factorize each of the following Completely

a $x^2 + x - 30$

b $m^2 + 4m + km + 4k$

c $a^2 + 2ab + b^2 - 36$

d $5x^5 + 40x^2$

e $16x^4 - y^4$

f $3x^2 + 14x + 15$

g $6x^3 - 60x - 2x^2$

h $2 - 2(x - 1)^3$

i $(98)^2 - 4$



4 Divide the number 20 into two numbers whose product is 75

5 The quotient: $x^3 - 8$ by $x - 2$ is (when $\neq 2$)

6 If $x^2 - K = (x - 3)(x + 3)$, Then the value of $K = \dots\dots\dots$

7 If $x - y = 5$, $x^2 + xy + y^2 = 7$, then $3x^3 - 3y^3 = \dots\dots\dots$

8 Find the solution set of each of the following in R:

a $4x^2 + 20x = -25$

b $x^3 + x^2 - 2x = 2$

c $4x^2 = 25$

d $a^2 + 11a - 12 = 0$

e $x^2 - 6x + 8 = 0$

f $x^3 = 81x$

9 If $a^2 - b^2 = a + b$, then $a - b = \dots\dots\dots$

10 - $18y^2 + 81$ (Complete to be perfect square)



- 11 A positive integer, if we add its square to its triple, the result will be 18 What is this integer ?

- 12 The expression : $9x^2 + 16$ can be factorized as a perfect square by adding the term and its additive inverse.

- 13 If the expression: $x^2 + 4x + a$ is a perfect square, then $a = \dots\dots\dots$

- 14 $a^2 - 6a + \dots\dots\dots$ (Complete to be perfect square)

- 15 The solution set of the equation: $X^2 + 25 = 0$ in R is

- 16 If $xy + 3x + yz + 3z = 15$, $y + 3 = 5$, then $x + z = \dots\dots\dots$

- 17 A positive integer, its square is more than its 3 times by 40, Find the number?

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Q1: Choose the correct answer

1 If $\overline{AB} \cong \overline{CD}$, Then $AB - CD = \dots\dots\dots$

(a) 0

(b) 1

(c) AB

(d) 2

2 In ΔABC : $(AB)^2 = (BC)^2 - (AC)^2$, then $\angle C \dots\dots\dots$

(a) acute

(b) straight

(c) obtuse

(d) right

3 A rhombus is of area 60 cm^2 and the length of one of its diagonals equals 10 cm. then the length of the other diagonal equals $\dots\dots\dots$ cm.

(a) 4

(b) 8

(c) 10

(d) 12

4 If $\Delta ABC \cong \Delta LMN$, then, $m(\angle B) = m(\angle \dots\dots\dots)$

(a) LMN

(b) MNL

(c) LNM

(d) NLM

5 If $\Delta ABC \cong \Delta XYZ$ and $m(\angle A) + m(\angle B) = 130^\circ$, $m(\angle Z) = \dots\dots\dots$

(a) 50°

(b) 65°

(c) 130°

(d) 180°

6 The rectangle whose dimensions are 6 cm. and 8 cm, then its diagonal length equals $\dots\dots\dots$ cm.

(a) 7

(b) 17

(c) 15

(d) 10

7 If $\overline{AB} \cong \overline{CD}$, Then $AB \div CD = \dots\dots\dots$

(a) 0

(b) 1

(c) AB

(d) 2

8 If $\Delta ABC \cong \Delta LMN$, $m(\angle A) = 50^\circ$, $m(\angle M) = 60^\circ$, $m(\angle C) = \dots\dots\dots$

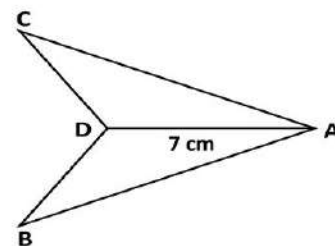
(a) 60°

(b) 50°

(c) 70°

(d) 10°





- 9 If $\triangle ABD \cong \triangle ACD$, $AD = 7$ cm, The perimeter of the figure $ABDC = 20$ cm, Then the perimeter of $\triangle ABD = \dots\dots\dots$ cm

(a) 27 (b) 17 (c) 26 (d) 10

- 10 In $\triangle ABC$, if $\angle A$ complements $\angle B$, then $(AB)^2 \dots\dots\dots (BC)^2 + (AC)^2$

(a) $>$ (b) $<$ (c) $=$ (d) $\leq$

- 11 If two triangle ABC and XYZ are congruent, then $\dots\dots\dots$

(a) $BC = XZ$ (b) $YX = CA$ (c) $ZY = CB$ (d) $AB = YZ$

- 12 ABC is a triangle in which $m(\angle A) = m(\angle B) + m(\angle C)$, then $m(\angle A) = \dots\dots\dots$

(a) 180° (b) 90° (c) 108° (d) 60°

- 13 If two triangle ABC and LMN are congruent, then $\dots\dots\dots$

(a) $BC = LN$ (b) $LM = CA$ (c) $NM = CB$ (d) $AB = MN$

- 14 The triangle whose side lengths are 10 cm, 12 cm, 8 cm. is $\dots\dots\dots$

(a) acute-angled (b) right-angled (c) obtuse-angled (d) equilateral

- 15 If $\triangle ABC \cong \triangle XYZ$ and $m(\angle X) + m(\angle Z) = 140^\circ$, $m(\angle B) = \dots\dots\dots$

(a) 70° (b) 220° (c) 40° (d) 140°

- 16 $\triangle XYZ$ is right at Y , if $XZ = 25$ cm, $XY = 20$ cm, Then $YZ = \dots\dots\dots$ cm

(a) 15 (b) 20 (c) 225 (d) 400

- 17 In $\triangle ABC$: $(AB)^2 = (BC)^2 + (AC)^2 + 5$, then $m(\angle C) \dots\dots\dots 90^\circ$.

(a) $>$ (b) $<$ (c) $=$ (d) $\leq$



18 Which of the following numbers could be the lengths of sides of an obtuse-angled triangle?

a 5, 5, 5

b 17, 8, 15

c 3, 5, 6

d 4, 7, 7

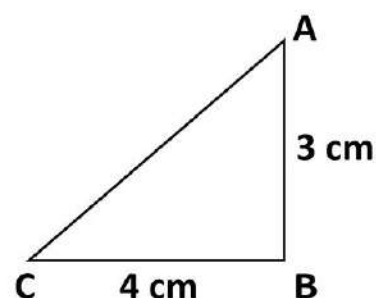
19 In the opposite figure:
what is the area of the square drawn on the side $\overline{AC}$?

a 14 cm^2

b 1 cm^2

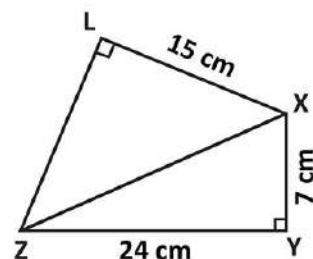
c 7 cm^2

d 25 cm^2



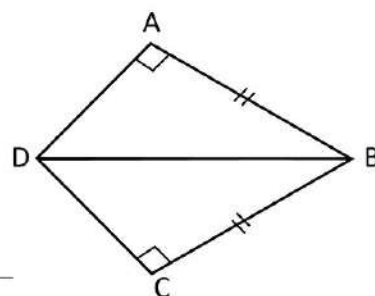
Q2: Answer The Following

1 In the opposite figure :
 $m(\angle Y) = m(\angle L) = 90^\circ$, $XY = 7 \text{ cm}$. $YZ = 24 \text{ cm}$.
 $XL = 15 \text{ cm}$.
Find: XZ , LZ

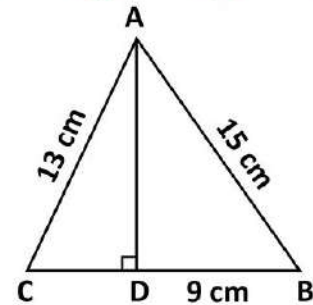


2 In ΔABC , if $(AB - BC)(AB + BC) > (AC)^2$, then the type of $\angle C$ is

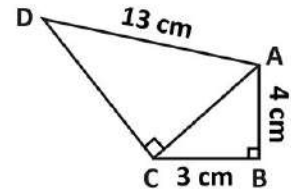
3 In the opposite figure:
 $m(\angle A) = m(\angle C) = 90^\circ$, $AB = BC = 5 \text{ cm}$, $AD = 3 \text{ cm}$.
Prove that: $\angle ABD \cong \angle CBD$
Find: the length of CD



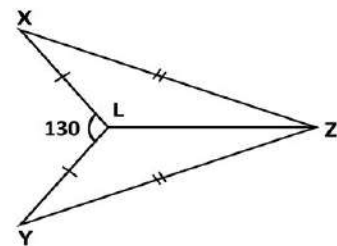
- 4 In the opposite figure :
 $\overline{AD} \perp \overline{BC}$, $BD = 9\text{cm}$, $AB = 15\text{ cm}$. $AC = 13\text{ cm}$.
 Find : The length of each of $\overline{AD}$, $\overline{DC}$
 and the area of the triangle ABC



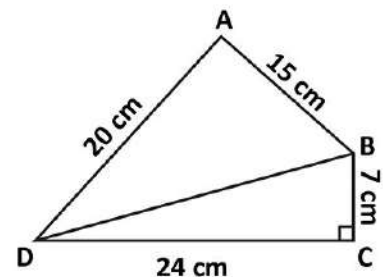
- 5 In the opposite figure:
 ABCD is a quadrilateral in which, $m(\angle B) = m(\angle ACD) = 90^\circ$
 $AB = 4\text{ cm}$. $BC = 3\text{ cm}$. and $AD = 13\text{ cm}$.
 Find: AC and DC



- 6 In the opposite figure:
 $YZ = XZ$, $XL = YL$, $m(\angle XLY) = 130^\circ$
 Prove that: $\triangle XLZ \cong \triangle YLZ$
 ,then find: $m(\angle XLZ)$



- 7 In the opposite figure:
 $m(\angle C) = 90^\circ$. $AB = 15\text{ cm}$.
 $BC = 7\text{ cm}$, $CD = 24\text{ cm}$, $AD = 20\text{ cm}$.
 Prove that : $m(\angle A) = 90^\circ$.



Q1: Choose the correct answer

1 If the expression : $x^2 + b x - 10$ can be factorized, then b may be equal to

☒ a 3☐ b 2☐ c 1☐ d - 1

2 If $(X + 3)$ is one factor of the expression : $x^2 + x - 6$, then the other factor is

☐ a $x + 3$ ☐ b $x - 4$ ☐ c $x + 1$ ☒ d $x - 2$

3 If $x^3 + 27 = (x + 3)(x^2 + k + 9)$, then k =

☐ a $- 6x$ ☒ b $- 3x$ ☐ c $3x$ ☐ d $6x$

4 If $x + y = 3$, $x^2 - xy + y^2 = 12$, then $x^3 + y^3 =$

☐ a 4☒ b 36☐ c 9☐ d 24

5 For the expression: $x^2 - 2x - k$ can be factorized, then $k \neq$

☐ a 8☐ b 3☒ c 6☐ d 15

6 If $(x - 3)$ is a factor of the expression: $x^2 - 4 x + 3$, then the other factor is

☐ a $(x + 1)$ ☒ b $(x - 1)$ ☐ c $(x + 3)$ ☐ d $(x - 3)$

7 If $(2a - 5) (3a - 2) = 6a^2 + k a + 10$, then k =

☐ a 15☐ b 19☒ c $- 19$ ☐ d 4

8 If $a^2 + b^2 = 15$, $2ab = 10$, Then $a + b =$

☐ a 5☐ b $- 5$ ☐ c 25☒ d ± 5

9 If $x^2 - 2xy + y^2 = 25$, then $X - y =$

☐ a 25☐ b 5☐ c $- 5$ ☒ d ± 5 

10 The S.S of the equation: $x^3 - x^2 = 0$ in R is

(a) $\{0\}$

(b) $\{0, 1\}$

(c) $\{1\}$

(d) $\emptyset$

11 If $x - y = 5$, $x^2 + xy + y^2 = 7$, then $x^3 - y^3 = \dots\dots\dots$

(a) 2

(b) 7

(c) 12

(d) 35

12 If $x^2 - a = (x - 5)(x + 5)$, Then $a = \dots\dots\dots$

(a) 5

(b) -25

(c) 25

(d) 10

13 The solution set of the equation: $2x^2 - 9x + 9 = 0$ in R is

(a) $\{3\}$

(b) $\{2, 3\}$

(c) $\{\frac{3}{2}, 3\}$

(d) $\{-\frac{3}{2}, -3\}$

14 If the expression $x^2 + ax + 64$ is a perfect square, then $a = \dots\dots\dots$

(a) 16

(b) ± 16

(c) 8

(d) ± 8

15 If $x^3 + y^3 = 24$, $x + y = 6$, then $x^2 - xy + y^2 = \dots\dots\dots$

(a) 4

(b) 12

(c) 18

(d) 30

16 If $x^2 + 4x + k$ is a perfect square, then $k = \dots\dots\dots$

(a) 1

(b) 2

(c) 3

(d) 4

17 If the polynomial $(9x^2 + bx + 1)$ is a perfect square, then what is the value of b ?

(a) ± 9

(b) ± 4

(c) ± 6

(d) ± 12

18 The factorization of $x^3 + 2x^2 - 4x - 8$ is

(a) $(x^2 - 4)(x - 2)$

(b) $(x - 2)(x + 2)^2$

(c) $(x + 2)(x - 2)$

(d) $(x^2 + 4)(x - 2)$



19 If $(x + b)(x + 3) = x^2 + ax + 15$, then what is the value of $a + b$?

(a) 3

(b) 12

(c) 13

(d) 5

20 If $x^2 + b = 12$, $x + a = 6$, then the numerical value of the expression $x^3 + ax^2 + bx + ab$ equals

(a) 6

(b) 12

(c) 2

(d) 72

21 Completing the perfect square for the expression: $x^2 + 9$ we add to it

(a) $\pm 12x$

(b) $\pm 6x$

(c) 12

(d) 6

22 If $a + b = 5$, $a^2 - b^2 = 15$, then what is the value of $a - b$?

(a) 20

(b) 3

(c) 75

(d) 10

23 If $(x + a)(y + b) = xy + 5x + 7y + 35$, then what is the value of ab ?

(a) 2

(b) 12

(c) 35

(d) 17

24 A square has an area of $16x^4 + 64x^2 + 64 \text{ cm}^2$. What is the length of its side in terms of x ?

(a) $(4x + 8) \text{ cm}$

(b) $(8x + 4) \text{ cm}$

(c) $(4x^2 + 8) \text{ cm}$

(d) $(8x^2 + 4) \text{ cm}$

25 If $ax^2 - b = (3x - 2)(3x + 2)$, what is the value of $a + b$?

(a) -13

(b) 13

(c) -5

(d) 5

26 When completing the square for: $(x^2 + 9)$ add

(a) $\pm 3x$

(b) $\pm 6x$

(c) $\pm 9x$

(d) $\pm 12x$

27 If $(x - 2)(x + 5) = 0$, which of the following is correct?

(a) $x = 2$ or $x = 5$

(b) $x = -2$ or $x = 5$

(c) $x = -2$ or $x = -5$

(d) $x = 2$
or $x = -5$



Q2: Answer The Following

1 $x^3 - 8 = (\dots\dots\dots) (x^2 + 2x + \dots\dots\dots)$

2 $8x^3 - \dots\dots\dots = (\dots\dots\dots - \dots\dots\dots) (\dots\dots\dots + \dots\dots\dots + 9)$

3 Factorize each of the following Completely

a $x^2 + x - 30$

$(x + 6)(x - 5)$

b $m^2 + 4m + km + 4k$

$(m + 4)(m + k)$

c $a^2 + 2ab + b^2 - 36$

$(a + b - 6)(a + b + 6)$

d $5x^5 + 40x^2$

$5x^2(x + 2)(x^2 - 2x + 4)$

e $16x^4 - y^4$

$(2x - y)(2x + y)(4x^2 + y^2)$

f $3x^2 + 14x + 15$

$(x + 3)(3x + 5)$

g $6x^3 - 60x - 2x^2$

$2x(x + 3)(3x - 10)$

h $2 - 2(x - 1)^3$

$2(2 - x)(x^2 - x + 1)$

i $(98)^2 - 4$

9600



4 Divide the number 20 into two numbers whose product is 75

5 and 15

5 The quotient: $x^3 - 8$ by $x - 2$ is (when $\neq 2$)

6 If $x^2 - K = (x - 3)(x + 3)$, Then the value of $K = 9$

7 If $x - y = 5$, $x^2 + xy + y^2 = 7$, then $3x^3 - 3y^3 = 105$

8 Find the solution set of each of the following in R:

a $4x^2 + 20x = -25$

$\{-2.5\}$

b $x^3 + x^2 - 2x = 2$

$\{-1, \sqrt{2}, -\sqrt{2}\}$

c $4x^2 = 25$

$\{\pm 2.5\}$

d $a^2 + 11a - 12 = 0$

$\{-12, 1\}$

e $x^2 - 6x + 8 = 0$

$\{2, 4\}$

f $x^3 = 81x$

$\{0, 9, -9\}$

9 If $a^2 - b^2 = a + b$, then $a - b = 1$

10 y^4 $-18y^2 + 81$ (Complete to be perfect square)



- 11 A positive integer, if we add its square to its triple, the result will be 18 What is this integer ?

3

- 12 The expression : $9x^2 + 16$ can be factorized as a perfect square by adding the term $24x$ and its additive inverse.

- 13 If the expression: $x^2 + 4x + a$ is a perfect square, then $a = 4$

- 14 $a^2 - 6a + 9$ (Complete to be perfect square)

- 15 The solution set of the equation: $X^2 + 25 = 0$ in R is $\emptyset$

- 16 If $xy + 3x + yz + 3z = 15$, $y + 3 = 5$, then $x + z = 3$

- 17 A positive integer, its square is more than its 3 times by 40, Find the number?

8

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والنفع يا كريم يا وهّاب.



Q1: Choose the correct answer

1 If $\overline{AB} \cong \overline{CD}$, Then $AB - CD = \dots\dots\dots$

- ☒ a 0 ☐ b 1 ☐ c AB ☐ d 2

2 In ΔABC : $(AB)^2 = (BC)^2 - (AC)^2$, then $\angle C \dots\dots\dots$

- ☒ a acute ☐ b straight ☐ c obtuse ☐ d right

3 A rhombus is of area 60 cm^2 and the length of one of its diagonals equals 10 cm. then the length of the other diagonal equals $\dots\dots\dots$ cm.

- ☐ a 4 ☐ b 8 ☐ c 10 ☒ d 12

4 If $\Delta ABC \cong \Delta LMN$, then, $m(\angle B) = m(\angle \dots\dots\dots)$

- ☒ a LMN ☐ b MNL ☐ c LNM ☐ d NLM

5 If $\Delta ABC \cong \Delta XYZ$ and $m(\angle A) + m(\angle B) = 130^\circ$, $m(\angle Z) = \dots\dots\dots$

- ☒ a 50° ☐ b 65° ☐ c 130° ☐ d 180°

6 The rectangle whose dimensions are 6 cm. and 8 cm, then its diagonal length equals $\dots\dots\dots$ cm.

- ☐ a 7 ☐ b 17 ☐ c 15 ☒ d 10

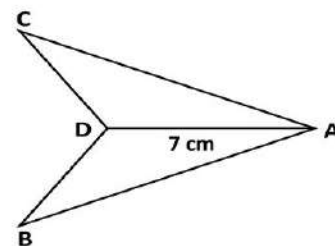
7 If $\overline{AB} \cong \overline{CD}$, Then $AB \div CD = \dots\dots\dots$

- ☐ a 0 ☒ b 1 ☐ c AB ☐ d 2

8 If $\Delta ABC \cong \Delta LMN$, $m(\angle A) = 50^\circ$, $m(\angle M) = 60^\circ$, $m(\angle C) = \dots\dots\dots$

- ☐ a 60° ☐ b 50° ☒ c 70° ☐ d 10°





- 9 If $\triangle ABD \cong \triangle ACD$, $AD = 7$ cm, The perimeter of the figure $ABDC = 20$ cm, Then the perimeter of $\triangle ABD = \dots\dots\dots$ cm

(a) 27 (b) 17 (c) 26 (d) 10

- 10 In $\triangle ABC$, if $\angle A$ complements $\angle B$, then $(AB)^2 \dots\dots\dots (BC)^2 + (AC)^2$

(a) $>$ (b) $<$ (c) $=$ (d) $\leq$

- 11 If two triangle ABC and XYZ are congruent, then $\dots\dots\dots$

(a) $BC = XZ$ (b) $YX = CA$ (c) $ZY = CB$ (d) $AB = YZ$

- 12 ABC is a triangle in which $m(\angle A) = m(\angle B) + m(\angle C)$, then $m(\angle A) = \dots\dots\dots$

(a) 180° (b) 90° (c) 108° (d) 60°

- 13 If two triangle ABC and LMN are congruent, then $\dots\dots\dots$

(a) $BC = LN$ (b) $LM = CA$ (c) $NM = CB$ (d) $AB = MN$

- 14 The triangle whose side lengths are 10 cm, 12 cm, 8 cm. is $\dots\dots\dots$

(a) acute-angled (b) right-angled (c) obtuse-angled (d) equilateral

- 15 If $\triangle ABC \cong \triangle XYZ$ and $m(\angle X) + m(\angle Z) = 140^\circ$, $m(\angle B) = \dots\dots\dots$

(a) 70° (b) 220° (c) 40° (d) 140°

- 16 $\triangle XYZ$ is right at Y , if $XZ = 25$ cm, $XY = 20$ cm, Then $YZ = \dots\dots\dots$ cm

(a) 15 (b) 20 (c) 225 (d) 400

- 17 In $\triangle ABC$: $(AB)^2 = (BC)^2 + (AC)^2 + 5$, then $m(\angle C) \dots\dots\dots 90^\circ$.

(a) $>$ (b) $<$ (c) $=$ (d) $\leq$



18 Which of the following numbers could be the lengths of sides of an obtuse-angled triangle?

a 5, 5, 5

b 17, 8, 15

c 3, 5, 6

d 4, 7, 7

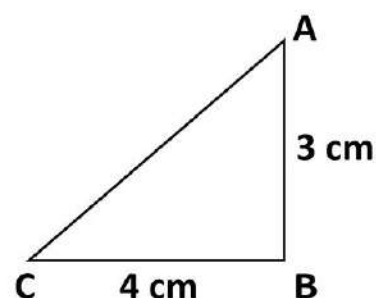
19 In the opposite figure:
what is the area of the square drawn on the side $\overline{AC}$?

a 14 cm^2

b 1 cm^2

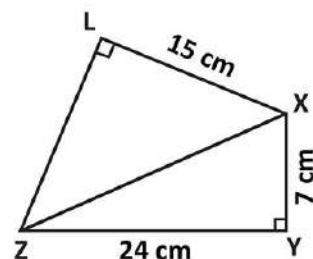
c 7 cm^2

d 25 cm^2



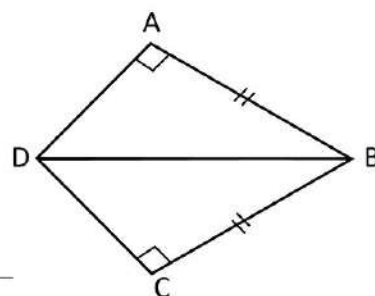
Q2: Answer The Following

1 In the opposite figure :
 $m(\angle Y) = m(\angle L) = 90^\circ$, $XY = 7 \text{ cm}$. $YZ = 24 \text{ cm}$.
 $XL = 15 \text{ cm}$.
Find: XZ , LZ

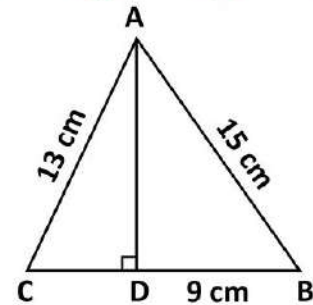


2 In ΔABC , if $(AB - BC)(AB + BC) > (AC)^2$, then the type of $\angle C$ is

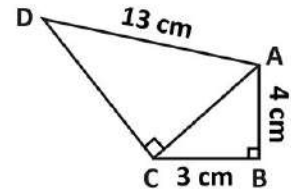
3 In the opposite figure:
 $m(\angle A) = m(\angle C) = 90^\circ$, $AB = BC = 5 \text{ cm}$, $AD = 3 \text{ cm}$.
Prove that: $\angle ABD \cong \angle CBD$
Find: the length of CD



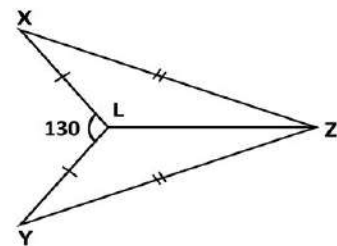
- 4 In the opposite figure :
 $\overline{AD} \perp \overline{BC}$, $BD = 9\text{cm}$, $AB = 15\text{ cm}$. $AC = 13\text{ cm}$.
 Find : The length of each of $\overline{AD}$, $\overline{DC}$
 and the area of the triangle ABC



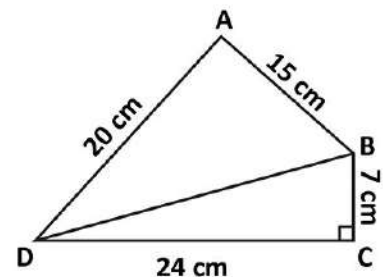
- 5 In the opposite figure:
 ABCD is a quadrilateral in which, $m(\angle B) = m(\angle ACD) = 90^\circ$
 $AB = 4\text{ cm}$. $BC = 3\text{ cm}$. and $AD = 13\text{ cm}$.
 Find: AC and DC



- 6 In the opposite figure:
 $YZ = XZ$, $XL = YL$, $m(\angle XLY) = 130^\circ$
 Prove that: $\triangle XLZ \cong \triangle YLZ$
 ,then find: $m(\angle XLZ)$



- 7 In the opposite figure:
 $m(\angle C) = 90^\circ$. $AB = 15\text{ cm}$.
 $BC = 7\text{ cm}$, $CD = 24\text{ cm}$, $AD = 20\text{ cm}$.
 Prove that : $m(\angle A) = 90^\circ$.



حمل الآن

مجاناً وحصرياً

المراجعة رقم (5)

اختبار شهر نوفمبر



November Exercise**First / Choose the correct answer:-**

1. If the polynomial $(9x^2 + bx + 1)$ is a perfect square, what is the value of b ?

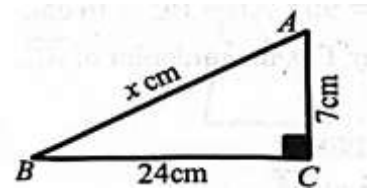
- a) ± 9 b) ± 4 c) ± 6 d) ± 12

2. If $a + b = 5$, $a^2 - b^2 = 15$ then what is the value of $a - b$?

- a) 20 b) 3 c) 75 d) 10

3. In the opposite figure, what is the value of X ?

- a) 31 b) 25
c) 17 d) 625



4. If $(x - 5)$ is one of the factors of the polynomial $(2x^2 - 7x - 15)$, what is the value of the other factor ?

- a) $(x - 3)$ b) $(2x + 3)$ c) $(x + 5)$ d) $(2x + 5)$

5. If $ax^3 - 27 = (2x - 3)(4x^2 + bx + 9)$, then what is the value of $a + b$?

- a) 6 b) 20 c) 48 d) 14

6. If $(x + a)(y + b) = xy + 5x + 7y + 35$, then what is the value of ab ?

- a) 2 b) 12 c) 35 d) 17

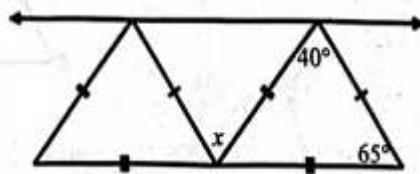
7. In the opposite figure, what is the value of X ?

a) 40

b) 25

c) 75

d) 105



8. If $(X - 2)(X + 5) = 0$, which of the following is correct?

a) $X = 2$ or $X = 5$

b) $X = -2$ or $X = 5$

c) $X = -2$ or $X = -5$

d) $X = 2$ or $X = -5$

9. If the polynomial $(Kx^2 + 20x + 25)$ is a perfect square, what is the value of K ?

a) 9

b) 4

c) 1

d) 2



Second / Choose the correct answer:-

Factorize each of the following completely:

1) $x^2 + x - 30$

2) $6x^3 - 60x - 2x^2$

3) $3x^2 + 14x + 15$

4) $16x^4 - y^4$

5) $5x^5 + 40x^2$

6) $m^2 + 4m + km + 4k$

7) $x^4 + 4y^4$

8) $a^2 + 2ab + b^2 - 36$

Steps to
factorize
trinomial

1. Rearrange

2. GCF

3. Perfect
square

4. Normal

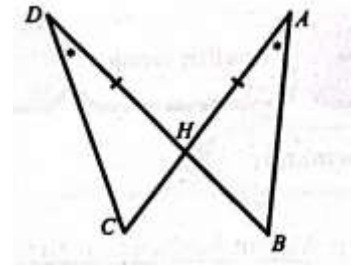
5. Completing
square



9) In the opposite figure: $m(\angle A) = m(\angle D)$

$$HA = HD, \overline{CA} \cap \overline{DB} = \{H\}$$

Prove that $\triangle AHB \equiv \triangle DHC$



10) Determine the type of the triangle according to its angles if the lengths of its sides are 12 cm , 10 cm , 7cm

Find the solution set for each of the following equations in $\mathbb{R}$:

11) $x^2 - 6x + 8 = 0$

12) $x^3 + x^2 - 2x = 2$

13) $x^3 = 81x$

14) $4x^2 + 20x = -25$

15) $a^2 + 11x - 12 = 0$

16) $4x^2 = 25$

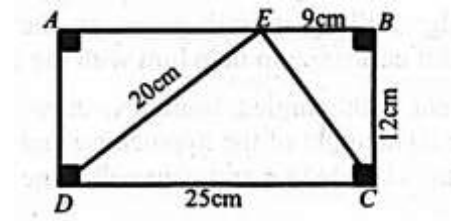
17) Use factorization to calculate the value of each of the following:

a) $(98)^2 - 4$

b) $(55)^2 + 2 \times 55 \times 45 + (45)^2$

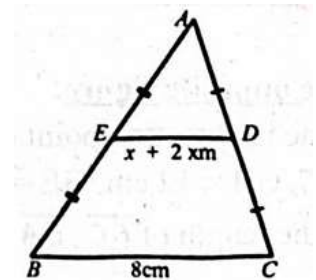
18) If $X^2 - Y^2 = 10$, $X - Y = -2$, find the numerical value of the expression $X + 2$

- 19) In the opposite figure: ABCD is a rectangle.
Prove that : $\triangle DEC$ is a right-angled triangle,
then find its perimeter.



- 21) A rectangle whose length is 4 cm more than its width if its area is 21 cm^2
Find its perimeter.

- 21) In the opposite figure:
What is the value of X ?



Answers

November Exercise

First / Choose the correct answer:-

1. If the polynomial $(9x^2 + bx + 1)$ is a perfect square, what is the value of b ?

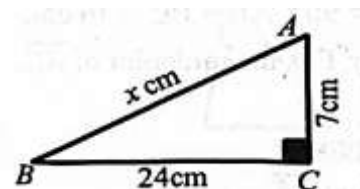
- a) ± 9 b) ± 4 c) ± 6 d) ± 12

2. If $a + b = 5$, $a^2 - b^2 = 15$ then what is the value of $a - b$?

- a) 20 b) 3 c) 75 d) 10

3. In the opposite figure, what is the value of X ?

- a) 31 b) 25
c) 17 d) 625



4. If $(x - 5)$ is one of the factors of the polynomial $(2x^2 - 7x - 15)$, what is the value of the other factor ?

- a) $(x - 3)$ b) $(2x + 3)$ c) $(x + 5)$ d) $(2x + 5)$

5. If $ax^3 - 27 = (2x - 3)(4x^2 + bx + 9)$, then what is the value of $a + b$?

- a) 6 b) 20 c) 48 d) 14

6. If $(x + a)(y + b) = xy + 5x + 7y + 35$, then what is the value of ab ?

- a) 2 b) 12 c) 35 d) 17



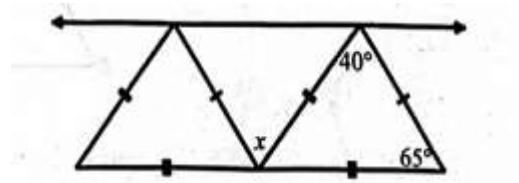
7. In the opposite figure, what is the value of X ?

a) 40

b) 25

c) 75

d) 105



8. If $(X - 2)(X + 5) = 0$, which of the following is correct?

a) $X = 2$ or $X = 5$

b) $X = -2$ or $X = 5$

c) $X = -2$ or $X = -5$

d) $X = 2$ or $X = -5$

9. If the polynomial $(Kx^2 + 20x + 25)$ is a perfect square, what is the value of K ?

a) 9

b) 4

c) 1

d) 2

Second / Choose the correct answer:-Factorize each of the following completely:


Steps to
factorize
trinomial

1) $x^2 + x - 30$

$(x - 5)(x + 6)$

2) $6x^3 - 60x - 2x^2$

$6x^3 - 2x^2 - 60x$

$2x (3x^2 - x - 30)$

$2x (3x - 10)(x + 3)$

3) $3x^2 + 14x + 15$

$(3x + 5)(x + 3)$

4) $16x^4 - y^4$

$(4X^2 - Y^2)(4X^2 + Y^2)$

$(2X - Y)(2X + Y)(4X^2 + Y^2)$

5) $5x^5 + 40x^2$

$5X^2 (X^3 - 8)$

$5X^2 (X - 2)(4x^2 + 2x + 4)$

6) $m^2 + 4m + km + 4k$

$(m^2 + 4m) + (km + 4k)$

$m(m + 4) + k(m + 4)$

$(m + k)(m + 4)$

1. Rearrange

2. GCF

3. Perfect
square

4. Normal

5. Completing
square

7) $x^4 + 4y^4$

$$(X^4 + 4X^2 Y^2 + 4Y^4) - 4X^2 Y^2$$

$$(X^2 + 2Y^2)^2 - 4X^2 Y^2$$

$$(X^2 + 2Y^2 + 2X)(X^2 + 2Y^2 - 2X)$$

8) $a^2 + 2ab + b^2 - 36$

$$(a^2 + 2ab + b^2) - 36$$

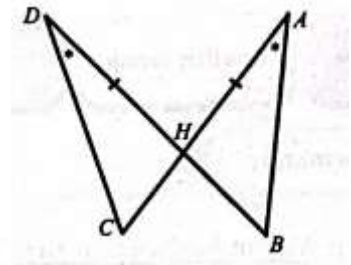
$$(a + b)^2 - 4X^2$$

$$(a + b + 6)(a + b - 6)$$

9) In the opposite figure: $m(\angle A) = m(\angle D)$

$$HA = HD, \overline{CA} \cap \overline{DB} = \{H\}$$

Prove that $\triangle AHB \cong \triangle DHC$



$$\therefore AH = DH, \quad m(\angle A) = m(\angle D), \quad m(\angle AHB) = m(\angle DHC) \quad \text{V.O.A}$$

$$\therefore \triangle AHB \cong \triangle DHC$$

10) Determine the type of the triangle according to its angles if the lengths of its sides are 12 cm , 10 cm , 7cm

$$12^2 = 144$$

$$7^2 + 10^2 = 149$$

$$12^2 < 7^2 + 10^2 \quad \text{so its acute-angled triangle}$$



Find the solution set for each of the following equations in $\mathbb{R}$:

11) $x^2 - 6x + 8 = 0$

$(x - 2)(x - 4) \quad \text{S.S} = \{4, 2\}$

12) $x^3 + x^2 - 2x = 2$

$x^3 + x^2 - 2x - 2 = 0$

$(x^3 + x^2) - (2x - 2) = 0$

$x^2 (x + 1) - 2(x + 1) = 0$

$(x^2 - 2)(x + 1) = 0$

$x^2 - 2 = 0 \quad x^2 = 2 \quad x = \pm\sqrt{2}$

$x + 1 = 0 \quad x = -1$

$\text{S.S} = \{+\sqrt{2}, -\sqrt{2}, -1\}$

13) $x^3 = 81x$

$x^3 - 81x = 0$

$x(x^2 - 81) = 0$

$x(x - 9)(x + 9) = 0$

$x = 0 \quad x = 9 \quad x = -9$

$\text{S.S} = \{0, -9, 9\}$

14) $4x^2 + 20x = -25$

$4x^2 + 20x + 25 = 0$

$(2x + 5)^2 = 0$

$2x + 5 = 0 \quad 2x = -5 \quad x = -\frac{5}{2}$

$\text{S.S} = \left\{-\frac{5}{2}\right\}$



15) $x^2 + 11x - 12 = 0$

$$(x - 12)(x + 1) = 0$$

$$x = 12 \quad x = -1$$

$$S.S = \{-1, 12\}$$

16) $4x^2 = 25$

$$4x^2 - 25 = 0$$

$$(2x - 5)(2x + 5) = 0$$

$$2x = 5 \quad x = \frac{5}{2}$$

$$2x = -5 \quad x = -\frac{5}{2}$$

$$S.S = \left\{-\frac{5}{2}, \frac{5}{2}\right\}$$

17) Use factorization to calculate the value of each of the following:

a) $(98)^2 - 4$

$$(98 - 2)(98 + 2)$$

$$96 \times 100 = 9600$$

b) $(55)^2 + 2 \times 55 \times 45 + (45)^2$

$$(55 + 45)^2 = 100^2 = 10,000$$

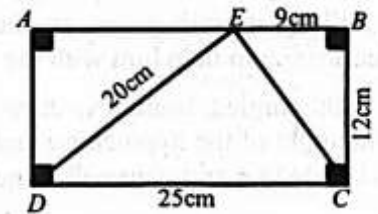
18) If $X^2 - Y^2 = 10$, $X - Y = -2$, find the numerical value of the expression $X + Y$

$$X^2 - Y^2 = (X - Y)(X + Y)$$

$$10 = -2 \times -5$$

$$\text{Then } (X + Y) = -5$$

19) In the opposite figure: ABCD is a rectangle.
Prove that : $\triangle DEC$ is a right-angled triangle,
then find its perimeter.



$\therefore$ ABCD is a rectangle

$$\therefore m(\angle CBE) = 90^\circ$$

In $\triangle XYZ$

$$\therefore m(\angle CBE) = 90^\circ$$

$$\therefore (EC)^2 = (CB)^2 + (EB)^2$$

$$\therefore EC = \sqrt{(CB)^2 + (EB)^2} = \sqrt{(12)^2 + (9)^2} = 15\text{cm}$$

In $\triangle DEC$

$$\therefore (CD)^2 = (25)^2 = 625 \quad , \quad (CE)^2 + (DE)^2 = (15)^2 + (20)^2 = 625$$

$$\therefore (CD)^2 = (CE)^2 + (DE)^2$$

$$\therefore m(\angle DEC) = 90^\circ$$

$$\text{Perimeter} = 20 + 25 + 15 = 60\text{cm}$$

21) A rectangle whose length is 4cm more than its width if its area is 21 cm^2

Find its perimeter.

$$\text{width} = X \quad \text{length} = X + 4$$

$$\text{area} = L \times W$$

$$X (X + 4) = 21$$

$$X^2 + 4X = 21$$

$$X^2 + 4X - 21 = 0$$

$$(X - 3)(X + 7) = 0$$

$$X = 3 \quad \text{OR} \quad X = -7 \text{ refused negative number}$$

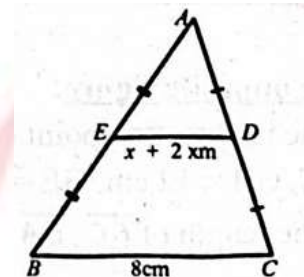
$$\text{SO width} = 3 \quad \text{then length} = 3 + 4 = 7$$

$$\text{Perimeter} = (3+7) \times 2 = 20\text{cm}$$

21) In the opposite figure:

What is the value of X ?

$$X + 2 = 4 \quad \text{then } x = 2$$



حمل الآن

مجاناً وحصرياً

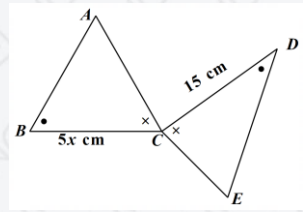
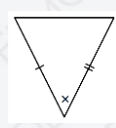
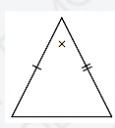
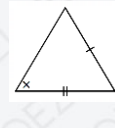
المراجعة رقم (6)

اختبار شهر نوفمبر



Model (1)

Question 1 : Choose the correct answer :

- 1 If $x^2 - b^2 = (x - 3)(x + 3)$, what is the value of b ?
 (a) ± 1 (b) ± 3 (c) ± 6 (d) ± 9
- 2 If $\angle A \cong \angle B$, $\angle A$ supplements $\angle B$, then $m(\angle A) = \dots\dots\dots^\circ$
 (a) 180° (b) 90° (c) 360° (d) 270°
- 3 In the given figure :
 What is the value of x ?

 (a) 3 (b) 5 (c) 10 (d) 15
- 4 $33m^2n + 44mn^2 = \dots\dots\dots (3m + 4n)$
 (a) $11m^2n^2$ (b) $11m + n$ (c) $11nm^2$ (d) $11mn$
- 5 If $x - y = -2$, $x^2 - y^2 = -16$, what is the arithmetic mean of the two number x, y ?
 (a) 2 (b) 4 (c) 8 (d) 16
- 6 Which of the following triangles is not congruent to the other triangles
 (a)  (b)  (c)  (d) 
- 7 To make $x^2 - x - m$ factorizable, then $m \neq \dots\dots\dots$
 (a) 6 (b) 8 (c) 12 (d) 30
- 8 $(999)^2 + 2 \times 999 + 1 = \dots\dots\dots$
 (a) 1000 (b) 9990 (c) 100 (d) 1,000,000
- 9 If $x + y = 4$, $3x^2 - 3y^2 = 24$, then $x - y = \dots\dots\dots$
 (a) 2 (b) 6 (c) 8 (d) 20

Question 2 : Answer the following questions :

① If the volume of a cuboid is $(x^4 - 625)$ cubic units , by using factorization , how can find its possible dimensions ?

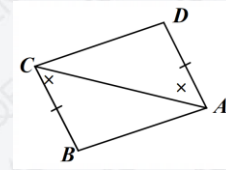
② Factorize : $16x^3y^3(a + b + 2) - 8x^2y^2(a + b + 2)$

③ Solve the equation in R : $(2x - 1)^2 + (2x - 1) = 6$

④ In the give figure : $BC = AD, m(\angle ACB) = m(\angle CAD)$
Prove that :

1) $\triangle ABC \cong \triangle CDA$

2) $\overline{AB} \parallel \overline{CD}$

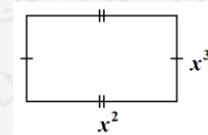


⑤ Use factorizing to facilitate finding the result :

a) $(48)^2 - (42)^2 = \dots\dots\dots$

b) $7 \times 27 + 7 \times 18 - 7 \times 25 = \dots\dots\dots$

⑥ Find the perimeter of the opposite figure by using factorization by taking out the greatest common factor .



⑦ If $\triangle ABC \cong \triangle xyz$, $m(\angle A) + m(\angle B) = 130^\circ$, Find the measure of $\angle Z$?

Model (2)

Question 1 : Choose the correct answer :

① $27a^3 + 18 = \dots\dots (3a^3 + 2)$

Ⓐ 9a

Ⓑ 18

Ⓒ 3a

Ⓓ 9

② If the polygon $ABCDE \cong$ the polygon LMNOP , then $\overline{NO} \cong \dots\dots\dots$

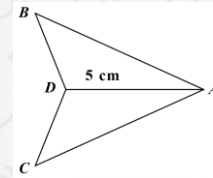
Ⓐ $\overline{AB}$

Ⓑ $\overline{BC}$

Ⓒ $\overline{CD}$

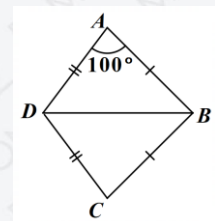
Ⓓ $\overline{DE}$

- 3 The solution set of the equation : $7x^2 + x = 0$ in $\mathbb{R}$ is
- (a) $\emptyset$ (b) $\{0,7\}$ (c) $\left\{0, \frac{1}{7}\right\}$ (d) $\left\{-\frac{1}{7}, 0\right\}$
- 4 $x^2 + 5x + 4 = \dots\dots\dots$
- (a) $(x + 4)(x + 1)$ (b) $(x + 5)(x - 1)$ (c) $(x + 3)(x + 2)$ (d) $(x - 1)(x - 4)$
- 5 A square with an area of $9x^2 + 48x + 64 \text{ cm}^2$ has a side length of cm
- (a) $x + 8$ (b) $3x + 4$ (c) $3x + 8$ (d) $x + 24$
- 6 In the given figure :
- If $\triangle ABC \cong \triangle ACD$, $AD = 5 \text{ cm}$,
the perimeter of the shape $ABDC = 30 \text{ cm}$,
then the perimeter $\triangle ABD = \dots\dots \text{ cm}$
- (a) 35 (b) 20 (c) 30 (d) 15
- 7 $(73)^2 + 2 \times 27 \times 73 + (27)^2 = \dots\dots\dots$
- (a) 100 (b) 1000 (c) 10,000 (d) 100,000
- 8 $x^2 - 9 = \dots\dots\dots$
- (a) $(x - 3)^2$ (b) $(x + 3)^2$ (c) $(x + 3)(x - 3)$ (d) $(x - 1)(x + 9)$
- 9 If $a^2 - b^2 = 45$, $a - b = 5$, What is the value of $\sqrt{a + b}$?
- (a) 9 (b) 3 (c) -3 (d) ± 3



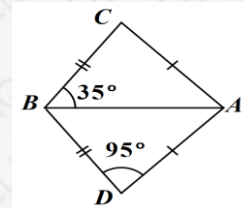
Question 2 : Answer the following questions :

- 1 If $(x + 7)$ one of the factors of the expression $(x^3 + 343)$, Find the other factor ?
- 2 In the givae figure : $AB = CB$, $AD = CD$, $m(\angle A) = 100^\circ$
1) Prore that $\triangle ABD \cong \triangle CBD$
2) Find by proof $m(\angle C)$
- 3 Use factorizing to find the value :
- 1) $\frac{5}{7} \times 3 + \frac{5}{7} \times 6 - \frac{5}{7} \times 2$
2) $(38)^2 - 2 \times 38 \times 8 + (8)^2$



- 4 Factorize : $14a(x + y) - 21b(x + y)$
- 5 Find the solution set of each of the following in R :
 a) $x^2 - 15 = 2x$
 b) $x^2 - x = 0$

- 6 From the opposite figure , Find $m(\angle CAD)$



- 7 Find the greatest common factor of the polynomial $16x^3 + 8x^2 - 32x$?

Model (3)

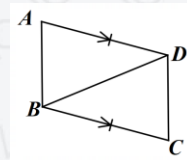
Question 1 : Choose the correct answer :

- 1 If $\overline{AB} \cong \overline{LM}$, then $AB - LM = \dots\dots\dots$
 (a) $2AB$ (b) 0 (c) $2LM$ (d) AB
- 2 If $n - 5m = 10$, then , what is the value of $10m - 2n$?
 (a) 100 (b) -100 (c) 20 (d) -20
- 3 If ABCD is a reactangle , then $\overline{AC} \cong \dots\dots\dots$
 (a) $\overline{AB}$ (b) $\overline{BC}$ (c) $\overline{AD}$ (d) $\overline{BD}$
- 4 If $3x + 3y = 18$, then $2x + 2y = \dots\dots\dots$
 (a) 2 (b) 6 (c) 12 (d) 54
- 5 $x^3 + y^3 = (\dots\dots) (x^2 - xy + y^2)$
 (a) $(x - y)$ (b) $(x + y)$ (c) $(x^2 - y^2)$ (d) $(x^2 + y^2)$
- 6 If the polynomial $(n + 3x + \frac{1}{4})$ is a perfect square , what is the value of n ?
 (a) 9 (b) $\frac{9}{4}x^2$ (c) $9x^2$ (d) $4x^2$

- 7 If the expression : $x^2 - 6x - m$ is a perfect square , then $m = \dots\dots$
- (a) -9 (b) 1 (c) 3 (d) 7
- 8 If $m(\angle x) + m(\angle y) = 100^\circ$, $\angle x \cong \angle y$, then $m(\angle x) = \dots\dots$
- (a) 25° (b) 50° (c) 100° (d) 200°
- 9 The solution set of the equation : $4x^2 - 25 = 0$ in R is $\dots\dots$
- (a) $\{2,5\}$ (b) $\{-2,-5\}$ (c) $\left\{-\frac{5}{2}, \frac{5}{2}\right\}$ (d) $\emptyset$

Question 2 : Answer the following questions :

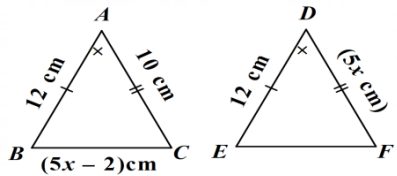
- 1 Factorize : $x^2 - \frac{4}{81}$
- 2 In the givea figure :
 $\overline{AD} \parallel \overline{BC}$, $\overline{AD} \cong \overline{CB}$
 Prove that : $\triangle ABD \cong \triangle CDB$
- 3 Aparallelogram has an area of 60 cm^2 , and its base length is 7 cm more than its corresponding height. What is the height of the parallelogram ?
- 4 Factorize : $2x^3(a + b) - 12x^2(a + b) + 18x(a + h)$
- 5 If $x^2 + xy + y^2 = 28$, $x^2 - y^2 = 12$
 $x + y = 6$, Then find the value of :
 1) $x^3 - y^3$
 2) $\frac{1}{7}y^3 - \frac{1}{7}x^3$
- 6 If $a + b = 3$, $x + y = 4$, then find using factoriztion by taking out the greatest commin factor the numerical value of the expression : $5y(a + b) + 5x(a + b)$
- 7 Factorize : $\frac{1}{16}a^2 + \frac{1}{10}a + \frac{1}{25}$



Model (4)

Question 1 : Choose the correct answer :

- 1 If $\overline{ML} \cong \overline{SR}$, then $\frac{ML}{SR} = \dots\dots\dots$
 - (a) ML
 - (b) SR
 - (c) 1
 - (d) 0
- 2 When completing the square for the expression : $(x^2 + 9)$, we add
 - (a) $\pm 3x$
 - (b) $\pm 6x$
 - (c) ± 6
 - (d) ± 9
- 3 $49ab + 14b^2 = 7b (\dots\dots\dots)$
 - (a) $7b + 2a$
 - (b) $7a + 2b$
 - (c) $42a + 7b$
 - (d) $14ab$
- 4 If $x^3 + 27 = (x + 3)(x^2 + k + 9)$, what is the value of K ?
 - (a) $-6x$
 - (b) $-3x$
 - (c) $3x$
 - (d) $6x$
- 5 A square has an area of $(9x^4 + 30x^2 + 25)cm^2$ what is the length of its side in terms of X ?
 - (a) $(3x + 5)cm$
 - (b) $(5x + 3)cm$
 - (c) $(3x^2 - 5)cm$
 - (d) $(3x^2 + 5)cm$
- 6 In the given figure : what is the length of $\overline{EF}$?



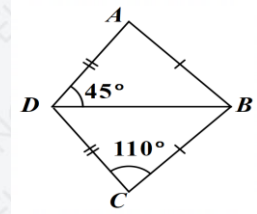
 - (a) 6 cm
 - (b) 8 cm
 - (c) 10 cm
 - (d) 12 cm
- 7 If $x^2 - y^2 = 16$, $y - x = 2$, what is the value of $x + y$?
 - (a) 4
 - (b) 8
 - (c) -8
 - (d) 2
- 8 The solution set of the equation $x^2 + 81 = 0$ in R is
 - (a) 9
 - (b) $\{-9\}$
 - (c) $\{-9, 9\}$
 - (d) $\emptyset$
- 9 $x^2 - ax + bx - ab = \dots\dots\dots$
 - (a) $(x - a)(x - b)$
 - (b) $(x - a)(x + b)$
 - (c) $(x + a)(x - b)$
 - (d) $(x + a)(x + b)$

Question 2 : Answer the following questions :

- 1 Find the value of the following using factorization by taking out the greatest common factor : $11 \times 123 + 11 \times 35 - 11 \times 58$

2 Factorize : $x^2 - y^2 - 6x - 6y$

- 3 In the givea figure :
 $AD = CD, AB = CB$
 $m(\angle ADB) = 45^\circ, m(\angle C) = 110^\circ$
 1) Prove that : $\triangle ABD \cong \triangle CBD$
 2) Find : $m(\angle A)$



- 4 Find the solution set of the equation : $x^2 - 6x = -8$ in R
- 5 Use factoring to find the value of $(35)^2 - (15)^2$
- 6 Factorize : $8x^5 - 10x^3y^2 + 2xy^4$
- 7 The area of a rectangle is $(x^2 + 9x - 22)cm^2$, find possible dimensions for this rectangle in terms of x ?

Model (5)

Question 1 : Choose the correct answer :

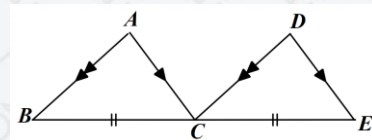
- 1 If $x^3 + y^3 = 20, x^2 - xy + y^2 = 4$, what is the value of $2x + 2y$?
 (a) 5 (b) 10 (c) 15 (d) 20
- 2 Which of the following represents the factorization of the polynomial $5x - 6 - x^2$?
 (a) $(x - 2)(x - 3)$ (b) $(x + 2)(x + 3)$
 (c) $-(x + 2)(x + 3)$ (d) $-(x - 2)(x - 3)$
- 3 If $a^2 - b^2 = 45, a - b = 5$, then what is the value of $\sqrt{a + b}$?
 (a) 9 (b) 3 (c) -3 (d) ± 3
- 4 If $x^3 + 27 = (x + 3)(x^2 + k + 9)$, what is the value of K ?
 (a) $-6x$ (b) $-3x$ (c) $3x$ (d) $6x$

- 5 If $\triangle ABC \cong \triangle LMN$, $m(\angle C) = 90^\circ$, then $m(\angle L) + m(\angle M) = \dots\dots\dots$
 (a) 45° (b) 90° (c) 180° (d) 120°
- 6 If $\triangle ABC \cong \triangle XYZ$, $m(\angle A) + m(\angle B) = 100^\circ$, then $m(\angle Z) = \dots\dots\dots$
 (a) 50° (b) 80° (c) 100° (d) 180°
- 7 If $\triangle ABC \cong \triangle XYZ$, the perimeter of the triangle $ABC = 18 \text{ cm}$, $BC = 6 \text{ cm}$, then $XY + XZ = \dots\dots\dots$
 (a) 3 cm (b) 6 cm (c) 12 cm (d) 24 cm
- 8 If $\overline{AB} \cong \overline{XY}$, then $AB + XY = \dots\dots\dots$
 (a) $2 AB$ (b) $4 AB$ (c) 0 (d) $3 XY$
- 9 If $(x^2 + 2x + 2)$ is one of the factors of The expression $(x^4 + 4)$, what is the other factor?
 (a) $x^2 - 2x + 2$ (b) $x^2 - 2x - 2$ (c) $x^2 + x + 2$ (d) $x^2 - x + 2$

Question 2 : Answer the following questions :

- 1 Factorize each of the following completely :
 1) $6x^2 + 7x + 2$
 2) $(a + b)^2 - 4$

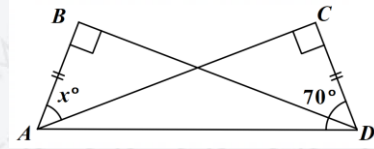
- 2 In the givea figure :
 $\overline{AB} \parallel \overline{DC}$, $\overline{AC} \parallel \overline{DE}$, $\overline{BC} \cong \overline{EC}$
 Prove that : $\triangle ABD \cong \triangle DCE$



- 3 Find the perimeter of the opposite figure using factorization by taking out the greatest common factor .
 15x
 $5x^2$
- 4 Simplify to the simplest from :
 $(3a - 2b)^2 - (3a + 2b)^2 + 24ab$

5

In the givea figure : $m(\angle C) = m(\angle B) = 90^\circ$, $DC = AB$, $m(\angle CDA) = 70^\circ$
Find : the value of X



6

Complete :

A) If $9x^2 - 16y^2 = 14$, $3x + 4y = 7$ Then $3x - 4y = \dots\dots$

B) If $x + y = 6$, $x - y = 3$, then $x^2 - y^2 = \dots\dots$

C) $x(a + b) + y(a + b) = (\dots + \dots)(a + b)$

7

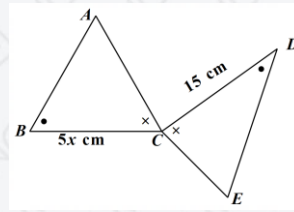
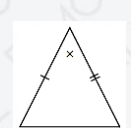
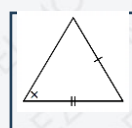
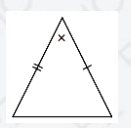
Solve each of the following equations on R :

1) $6x^2 - 7x - 3 = 0$

2) $(2x - 1)^2 + (2x - 1) = 6$

Model (1)

Question 1 : Choose the correct answer :

- 1 If $x^2 - b^2 = (x - 3)(x + 3)$, what is the value of b ?
 (a) ± 1 (b) ± 3 (c) ± 6 (d) ± 9
- 2 If $\angle A \cong \angle B$, $\angle A$ supplements $\angle B$, then $m(\angle A) = \dots\dots\dots^\circ$
 (a) 180° (b) 90° (c) 360° (d) 270°
- 3 In the given figure :
 What is the value of x ?

 (a) 3 (b) 5 (c) 10 (d) 15
- 4 $33m^2n + 44mn^2 = \dots\dots\dots (3m + 4n)$
 (a) $11m^2n^2$ (b) $11m + n$ (c) $11nm^2$ (d) $11mn$
- 5 If $x - y = -2$, $x^2 - y^2 = -16$, what is the arithmetic mean of the two number x, y ?
 (a) 2 (b) 4 (c) 8 (d) 16
- 6 Which of the following triangles is not congruent to the other triangles
 (a)  (b)  (c)  (d) 
- 7 To make $x^2 - x - m$ factorizable, then $m \neq \dots\dots\dots$
 (a) 6 (b) 8 (c) 12 (d) 30
- 8 $(999)^2 + 2 \times 999 + 1 = \dots\dots\dots$
 (a) 1000 (b) 9990 (c) 100 (d) 1,000,000
- 9 If $x + y = 4$, $3x^2 - 3y^2 = 24$, then $x - y = \dots\dots\dots$
 (a) 2 (b) 6 (c) 8 (d) 20

Question 2 : Answer the following questions :

- ① If the volume of a cuboid is $(x^4 - 625)$ cubic units , by using factorization , how can find its possible dimensions ?

Ans : $x^4 - 625$

$$= (x^2 + 25)(x^2 - 25)$$

$$= (x^2 + 25)(x + 5)(x - 5)$$

The Possible dimensions are :

$$(x - 5), (x + 5), (x^2 + 25) \text{ length units}$$

- ② Factorize : $16x^3y^3(a + b + 2) - 8x^2y^2(a + b + 2)$
- $$(a + b + 2)(16x^3y^3 - 8x^2y^2)$$
- $$= 8x^2y^2(a + b + 2)(2xy - 1)$$

- ③ Solve the equation in R : $(2x - 1)^2 + (2x - 1) = 6$

The solution set = $\left\{\frac{3}{2}, 1\right\}$

- ④ In the give figure : $BC = AD, m(\angle ACB) = m(\angle CAD)$

Prove that :

1) $\triangle ABC \cong \triangle CDA$

2) $\overline{AB} \parallel \overline{CD}$

$\because BC = AD$ and

$m(\angle ACB) = m(\angle CAD)$

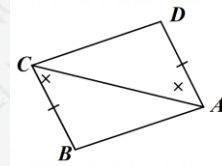
$\therefore$ From (SAS) then

$\triangle ABC \cong \triangle CDA$

$\therefore m(\angle BAC) = m(\angle DCA)$

Then $\overline{AB} \parallel \overline{CD}$

(alternate interior angles are equal)



- ⑤ Use factorizing to facilitate finding the result :

a) $(48)^2 - (42)^2 = 540$

b) $7 \times 27 + 7 \times 18 - 7 \times 25 = 140$

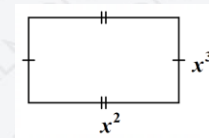
- ⑥ Find the perimeter of the opposite figure by using factorization by taking out the greatest common factor .

$P = 2 \times (L + W)$

$2 \times (x^3 + x^2)$

$= 2x^3 + 2x^2$

$= 2x^2(x + 1)$



7 If $\triangle ABC \cong \triangle xyz$, $m(\angle A) + m(\angle B) = 130^\circ$, Find the measure of $\angle Z$?

$$m(\angle z) = 50^\circ$$

Model (2)

Question 1 : Choose the correct answer :

1 $27a^3 + 18 = \dots (3a^3 + 2)$

- (a) $9a$ (b) 18 (c) $3a$ (d) 9

2 If the polygon $ABCDE \cong$ the polygon $LMNOP$, then $\overline{NO} \cong \dots\dots\dots$

- (a) $\overline{AB}$ (b) $\overline{BC}$ (c) $\overline{CD}$ (d) $\overline{DE}$

3 The solution set of the equation : $7x^2 + x = 0$ in R is $\dots\dots\dots$

- (a) $\emptyset$ (b) $\{0, 7\}$ (c) $\left\{0, \frac{1}{7}\right\}$ (d) $\left\{-\frac{1}{7}, 0\right\}$

4 $x^2 + 5x + 4 = \dots\dots\dots$

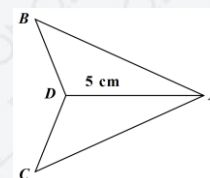
- (a) $(x + 4)(x + 1)$ (b) $(x + 5)(x - 1)$ (c) $(x + 3)(x + 2)$ (d) $(x - 1)(x - 4)$

5 A square with an area of $9x^2 + 48x + 64 \text{ cm}^2$ has a side length of $\dots\dots\dots$ cm

- (a) $x + 8$ (b) $3x + 4$ (c) $3x + 8$ (d) $x + 24$

6 In the given figure :

If $\triangle ABC \cong \triangle ACD$, $AD = 5 \text{ cm}$,
the perimeter of the shape $ABDC = 30 \text{ cm}$,
then the perimeter $\triangle ABD = \dots\dots\dots$ cm



- (a) 35 (b) 20 (c) 30 (d) 15

7 $(73)^2 + 2 \times 27 \times 73 + (27)^2 = \dots\dots\dots$

- (a) 100 (b) 1000 (c) 10,000 (d) $100,000$

8 $x^2 - 9 = \dots\dots\dots$

- (a) $(x - 3)^2$ (b) $(x + 3)^2$ (c) $(x + 3)(x - 3)$ (d) $(x - 1)(x + 9)$

9 If $a^2 - b^2 = 45$, $a - b = 5$, What is the value of $\sqrt{a + b}$?

(a) 9

(b) 3

(c) -3

(d) ± 3

Question 2 : Answer the following questions :

1 If $(x + 7)$ one of the factors of the expression $(x^3 + 343)$, Find the other factor ?

The other factor is $x^2 - 7x + 49$

2 In the givea figure : $AB = CB$, $AD = CD$, $m(\angle A) = 100^\circ$

1) Prore that $\triangle ABD \cong \triangle CBD$

2) Find by proof $m(\angle C)$

$\therefore \text{In } \triangle ABD \cong \triangle CBD$

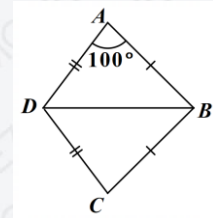
$\overline{BC} \cong \overline{BD}$ (common side),

$\overline{AD} \cong \overline{CD}$ (given),

$\overline{AB} \cong \overline{CB}$ (given),

$\therefore \triangle ABD \cong \triangle CBD$

Form the congruence : $m(\angle C) = m(\angle A) = 100^\circ$



3 Use factorizing to find the value :

1) $\frac{5}{7} \times 3 + \frac{5}{7} \times 6 - \frac{5}{7} \times 2$

2) $(38)^2 - 2 \times 38 \times 8 + (8)^2$

1) $\frac{5}{7} (3 + 6 - 2) = \frac{5}{7} \times 7 = 5$

2) $(38 - 8)^2 = 900$

4 Factorize : $14a(x + y) - 21b(x + y)$

$7(x + y)(2a - 3b)$

5 Find the solution set of each of the following in R :

a) $x^2 - 15 = 2x$

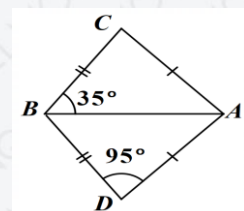
b) $x^2 - x = 0$

a) $\{-3, 5\}$

b) $\{0, 1\}$

6 From the opposite figure , Find $m(\angle CAD)$

$m(\angle CAD) = 100^\circ$



- 7 Find the greatest common factor of the polynomial $16x^3 + 8x^2 - 32x$?

$$G.C.F = 8x$$

Model (3)

Question 1 : Choose the correct answer :

- 1 If $\overline{AB} \cong \overline{LM}$, then $AB - LM = \dots\dots\dots$
- (a) $2AB$ (b) 0 (c) $2LM$ (d) AB
- 2 If $n - 5m = 10$, then , what is the value of $10m - 2n$?
- (a) 100 (b) -100 (c) 20 (d) -20
- 3 If ABCD is a reactangle , then $\overline{AC} \cong \dots\dots\dots$
- (a) $\overline{AB}$ (b) $\overline{BC}$ (c) $\overline{AD}$ (d) $\overline{BD}$
- 4 If $3x + 3y = 18$, then $2x + 2y = \dots\dots\dots$
- (a) 2 (b) 6 (c) 12 (d) 54
- 5 $x^3 + y^3 = (\dots\dots) (x^2 - xy + y^2)$
- (a) $(x - y)$ (b) $(x + y)$ (c) $(x^2 - y^2)$ (d) $(x^2 + y^2)$
- 6 If the polynomial $(n + 3x + \frac{1}{4})$ is a perfect square , what is the value of n ?
- (a) 9 (b) $\frac{9}{4}x^2$ (c) $9x^2$ (d) $4x^2$
- 7 If the expression : $x^2 - 6x - m$ is a perfect square , then m =
- (a) -9 (b) 1 (c) 3 (d) 7
- 8 If $m(\angle x) + m(\angle y) = 100^\circ$, $\angle x \cong \angle y$, then $m(\angle x) = \dots\dots\dots$
- (a) 25° (b) 50° (c) 100° (d) 200°
- 9 The solution set of the equation : $4x^2 - 25 = 0$ in R is
- (a) $\{2,5\}$ (b) $\{-2,-5\}$ (c) $\{-\frac{5}{2}, \frac{5}{2}\}$ (d) $\emptyset$

Question 2 : Answer the following questions :

① Factorize : $x^2 - \frac{4}{81}$

$$\left(x + \frac{2}{9}\right)\left(x - \frac{2}{9}\right)$$

② In the givea figure :

$$\overline{AD} \parallel \overline{BC}, \overline{AD} \cong \overline{CB}$$

Prove that : $\triangle ABD \cong \triangle CDB$

$$m(\angle ADB) = m(\angle CBD)$$

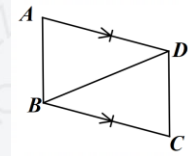
(alternating in terior angle)

$$\text{In } \triangle ABD \cong \triangle CDB$$

$$m(\angle ADB) = m(\angle CBD), \overline{AD} \cong \overline{CB}$$

$$\overline{BD} \cong \overline{DB} \text{ (common side),}$$

$$\therefore \triangle ABD \cong \triangle CDB$$



③ Aparallelogram has an area of 60 cm^2 , and its base length is 7 cm more than its corresponding height. What is the height of the parallelogram ?

$$A = b \times h \quad \because b = (h + 7)$$

$$\therefore A = (h + 7) \times h$$

$$60 = h^2 + 7h$$

$$h^2 + 7h - 60 = 0$$

$$(h + 12)(h - 5) = 0$$

$$h = -12 \quad h = 5$$

$$\therefore \text{The height is } h = 5 \text{ cm}$$

④ Factorize : $2x^3(a + b) - 12x^2(a + b) + 18x(a + h)$

$$= 2x(a + b)(x^2 - 6x + 9)$$

$$= 2x(a + b)(x - 3)^2$$

- 5 If $x^2 + xy + y^2 = 28$, $x^2 - y^2 = 12$
 $x + y = 6$, Then find the value of :
 1) $x^3 - y^3$
 2) $\frac{1}{7}y^3 - \frac{1}{7}x^3$
 1) $(x - y)(x^2 + xy + y^2) = 2 \times 28 = 56$
 2) $\frac{1}{7}(y - x)(y^2 + xy + x^2) = \frac{1}{7} \times (-2) \times 28 = -8$
- 6 If $a + b = 3$, $x + y = 4$, then find using factorization by taking out the greatest common factor the numerical value of the expression : $5y(a + b) + 5x(a + b)$
 $\therefore$ GCF of the expression is $5(a + b)$
 $\therefore 5y(a + b) + 5x(a + b) = 5(a + b)(y + x)$
 $\therefore$ The numerical value of the expression $= 5 \times 3 \times 4 = 60$
- 7 Factorize : $\frac{1}{16}a^2 + \frac{1}{10}a + \frac{1}{25}$
 $(\frac{1}{4}a + \frac{1}{5})^2$

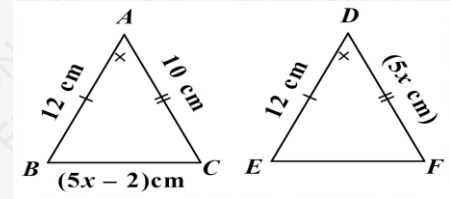
Model (4)

Question 1 : Choose the correct answer :

- 1 If $\overline{ML} \cong \overline{SR}$, then $\frac{ML}{SR} = \dots\dots\dots$
 (a) ML (b) SR (c) 1 (d) 0
- 2 When completing the square for the expression : $(x^2 + 9)$, we add
 (a) $\pm 3x$ (b) $\pm 6x$ (c) ± 6 (d) ± 9
- 3 $49ab + 14b^2 = 7b (\dots\dots\dots)$
 (a) $7b + 2a$ (b) $7a + 2b$ (c) $42a + 7b$ (d) $14ab$
- 4 If $x^3 + 27 = (x + 3)(x^2 + k + 9)$, what is the value of K ?
 (a) $-6x$ (b) $-3x$ (c) $3x$ (d) $6x$
- 5 A square has an area of $(9x^4 + 30x^2 + 25)cm^2$ what is the length of its side in terms of X ?
 (a) $(3x + 5)cm$ (b) $(5x + 3)cm$ (c) $(3x^2 - 5)cm$ (d) $(3x^2 + 5)cm$

6 In the given figure : what is the length of $\overline{EF}$?

- (a) 6 cm (b) **8 cm**
(c) 10 cm (d) 12 cm



7 If $x^2 - y^2 = 16$, $y - x = 2$, what is the value of $x + y$?

- (a) 4 (b) 8 (c) **-8** (d) 2

8 The solution set of the equation $x^2 + 81 = 0$ in R is

- (a) 9 (b) $\{-9\}$ (c) $\{-9, 9\}$ (d) **$\emptyset$**

9 $x^2 - ax + bx - ab = \dots\dots\dots$

- (a) $(x - a)(x - b)$ (b) **$(x - a)(x + b)$** (c) $(x + a)(x - b)$ (d) $(x + a)(x + b)$

Question 2 : Answer the following questions :

1 Find the value of the following using factorization by taking out the greatest common factor : $11 \times 123 + 11 \times 35 - 11 \times 58$

1100

2 Factorize : $x^2 - y^2 - 6x - 6y$

$(x + y)(x - y - 6)$

3 In the givea figure :

$AD = CD, AB = CB$

$m(\angle ADB) = 45^\circ, m(\angle C) = 110^\circ$

1) Prove that : $\triangle ABD \cong \triangle CBD$

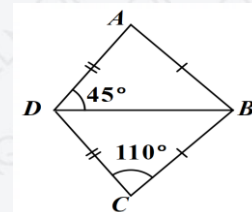
2) Find : $m(\angle A)$

In $\triangle ABD \cong \triangle CBD$

$BD = BD$ (common side),

$\therefore \triangle ABD \cong \triangle CBD$

$\therefore m(\angle A) = m(\angle C) = 110^\circ$



4 Find the solution set of the equation : $x^2 - 6x = -8$ in R

$$x^2 - 6x + 8 = 0$$

$$(x - 2)(x - 4) = 0$$

$\therefore$ The solution set = $\{2, 4\}$

- 5 Use factoring to find the value of $(35)^2 - (15)^2$
 $(35 + 15)(35 - 15) = 50 \times 20 = 1000$
- 6 Factorize : $8x^5 - 10x^3y^2 + 2xy^4$
 $2x(2x - y)(2x + y)(x - y)(x + y)$
- 7 The area of a rectangle is $(x^2 + 9x - 22)cm^2$, find possible dimensions for this rectangle in terms of x ?
 $(x - 2)cm$, $(x + 11)cm$

Model (5)

Question 1 : Choose the correct answer :

- 1 If $x^3 + y^3 = 20$, $x^2 - xy + y^2 = 4$, what is the value of $2x + 2y$?
 (a) 5 (b) **10** (c) 15 (d) 20
- 2 Which of the following represents the factorization of the polynomial $5x - 6 - x^2$?
 (a) $(x - 2)(x - 3)$ (b) $(x + 2)(x + 3)$
 (c) $-(x + 2)(x + 3)$ (d) **$-(x - 2)(x - 3)$**
- 3 If $a^2 - b^2 = 45$, $a - b = 5$, then what is the value of $\sqrt{a + b}$?
 (a) 9 (b) **3** (c) -3 (d) ± 3
- 4 If $x^3 + 27 = (x + 3)(x^2 + k + 9)$, what is the value of K ?
 (a) $-6x$ (b) **$-3x$** (c) $3x$ (d) $6x$
- 5 If $\triangle ABC \cong \triangle LMN$, $m(\angle C) = 90^\circ$, then $m(\angle L) + m(\angle M) = \dots\dots\dots$
 (a) 45° (b) **90°** (c) 180° (d) 120°
- 6 If $\triangle ABC \cong \triangle XYZ$, $m(\angle A) + m(\angle B) = 100^\circ$, then $m(\angle Z) = \dots\dots\dots$
 (a) 50° (b) **80°** (c) 100° (d) 180°
- 7 If $\triangle ABC \cong \triangle XYZ$, the perimeter of the triangle $ABC = 18\text{ cm}$, $BC = 6\text{ cm}$, then $XY + XZ = \dots\dots\dots$
 (a) 3 cm (b) 6 cm (c) **12 cm** (d) 24 cm
- 8 If $\overline{AB} \cong \overline{XY}$, then $AB + XY = \dots\dots\dots$
 (a) **$2AB$** (b) $4AB$ (c) 0 (d) $3XY$

- 9 If $(x^2 + 2x + 2)$ is one of the factors of The expression $(x^4 + 4)$, what is the other factor ?
- (a) $x^2 - 2x + 2$ (b) $x^2 - 2x - 2$ (c) $x^2 + x + 2$ (d) $x^2 - x + 2$

Question 2 : Answer the following questions :

- 1 Factorize each of the following completely :

1) $6x^2 + 7x + 2$
 2) $(a + b)^2 - 4$
 1) $(2x + 1)(3x + 2)$
 2) $(a + b + 2)(a + b - 2)$

- 2 In the givea figure :
 $\overline{AB} // \overline{DC}, \overline{AC} // \overline{DE}, \overline{BC} \cong \overline{EC}$

Prove that : $\triangle ABD \cong \triangle DCE$

$\therefore \overline{AB} // \overline{DC}, \overline{BE}$ is a transversal :

$\therefore m(\angle ABC) = m(\angle DCE) (1)$

(corresponding angles)

$\therefore \overline{AC} // \overline{DE}, \overline{BE}$ is a transversal :

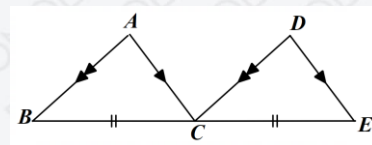
$\therefore m(\angle ACB) = m(\angle DEC) (2)$

(corresponding angles)

$\therefore BC = CE (3)$

From (1), (2), (3):

$\therefore \triangle ABC \cong \triangle DCE$

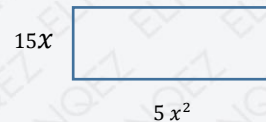


- 3 Find the perimeter of the opposite figure using factorization by taking out the greatest common factor .

$p = (5x^2 + 15x) \times 2$

$p = (10x^2 + 30x)$

$p = 10x(x + 3)$



- 4 Simplify to the simplest from :

$(3a - 2b)^2 - (3a + 2b)^2 + 24ab$

$((3a - 2b) + (3a + 2b))((3a - 2b) - (3a + 2b)) + 24ab$

$6a \times (-4b) + 24ab$

$-24ab + 24ab = \text{zero}$

5

In the givea figure : $m(\angle C) = m(\angle B) = 90^\circ$, $DC = AB$, $m(\angle CDA) = 70^\circ$

Find : the value of X

$\therefore \text{In } \triangle ABD \cong \triangle DCA$

$\overline{DA} \cong \overline{AD}$ (common side),

$\overline{DC} \cong \overline{AB}$ (given),

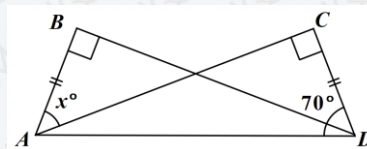
$m(\angle C) = m(\angle B) = 90^\circ$ (given),

$\therefore \triangle ABD \cong \triangle DCA$

$\therefore m(\angle BAD) = m(\angle CDA) = 70^\circ$

$\therefore m(\angle CAD) = 180^\circ - (70^\circ + 90^\circ) = 20^\circ$

$\therefore x = 70 - 20 = 50$



6

Complete :

A) If $9x^2 - 16y^2 = 14$, $3x + 4y = 7$ Then $3x - 4y = 2$

B) If $x + y = 6$, $x - y = 3$, then $x^2 - y^2 = 18$

C) $x(a + b) + y(a + b) = (x + y)(a + b)$

7

Solve each of the following equations on R :

1) $6x^2 - 7x - 3 = 0$

2) $(2x - 1)^2 + (2x - 1) = 6$

1) $\therefore 6x^2 - 7x - 3 = 0$

$\therefore (2x - 3)(3x + 1) = 0$

$\therefore 2x - 3 = 0$ or $3x + 1 = 0$

$\therefore x = \frac{3}{2}$ | $x = -\frac{1}{3}$

$\therefore \text{The solution set} = \left\{\frac{3}{2}, -\frac{1}{3}\right\}$

2) $\therefore (2x - 1)^2 + (2x - 1) = 6$

$\therefore 4x^2 - 4x + 1 + 2x - 1 - 6 = 0$

$\therefore 4x^2 - 2x - 6 = 0$

$\therefore (2x^2 - x - 3) = 0$

Divid both sides of the equation by 2

$\therefore (2x - 3)(x + 1) = 0$

$\therefore 2x - 3 = 0$ or $x + 1 = 0$

$\therefore x = \frac{3}{2}$ | $x = -1$

$\therefore \text{The solution set} = \left\{\frac{3}{2}, -1\right\}$

كيفية طباعة صفحات معينة من ملف معين مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9

